THE IRON AGE

Established 1855 — New York, November 17, 1910 — Vol. 86: No. 20

Published Every Thursday by the
DAVID WILLIAMS COMPANY
14-16 Park Place, New York

Entered at the New York Post Office as Second Class Mail Matter.

Subscription Price, United States and Mexico, $5.00 per Annum; to Canada, $7.50 per Annum; to Other Foreign Countries, $10.00 per Annum. Single Copies, 20 Cents.

CHARLES T. ROOT, - - - - - PRESIDENT
W. H. TAYLOR, - - - TREASURER AND GENERAL MANAGER
HAROLD S. BUTTENHEIM, - - - - - SECRETARY

GEO. W. COPE, - - - - - } EDITORS
A. I. FINDLEY, - - - - - }
H. R. COBLEIGH, - - - - - MECHANICAL EDITOR

Branch Offices

Philadelphia, Real Estate Trust Building — Chicago, Fisher Building
Pittsburgh, Park Building — Cleveland, American Trust Building
Boston, Compton Building — Cincinnati, 807 Andrews Building
Milwaukee, 1417 Majestic Building.

CONTENTS.

Further Rail Orders

No Uniform Policy in Railroad Buying

Pig Iron Markets Firmer, While Finished Materials Are Generally Quiet

The conflicting reports concerning the policy of the railroads in the purchase of rails and equipment are evidently due to the fact that each road will be governed by its own condition and needs. What has come out in the past week indicates that while some roads will buy little, others are now considering purchases of considerable amount. In some cases orders are being placed, or will be placed, without waiting for the decisions on rate advances; other requisitions will be determined by the outcome of the present hearings.

The Louisville & Nashville Railroad has just placed 29,000 tons with the Tennessee Company. The Carnegie Steel Company, in addition to 15,000 tons of the 30,000 tons bought by the Norfolk & Western, will roll 5700 tons for A. De Mayo & Co., and the leading interest has sold 8000 tons to the Kansas City, Mexico & Orient. The Pennsylvania Railroad and the New York Central are making progress on their rail estimates, and the Lehigh Valley, Lackawanna, New Haven and Boston & Maine are expected to place orders soon, while several Western lines are negotiating. The Boston & Maine's requirements may be as high as 50,000 tons, representing an unusual programme of renewals.

Considerable steel car business is likely to be given out before the end of the year, 10,000 to 12,000 cars being included in late estimates. An early order is expected from the Pittsburgh & Shawmut for 2800 cars and a number of locomotives.

Finished material markets have been generally quiet, and buying on a large scale, apart from rail orders, is not looked for in the remainder of the year.

The condition heretofore noted in the merchant pipe market—a growing demand from jobbers whose stocks have been depleted—is more marked, and pipe mills are increasing their output.

The tin plate situation has improved, two or three important consumers having placed their orders for the first half of 1911, though shipments in some cases will not begin before spring.

Sheet mills are fairly well sold into 1911, and prices are maintained as a rule, though shading has been reported in territory tributary to certain mills.

In structural steel the chief railroad inquiry is from the Boston Elevated, which will require 5000 tons for

its Cambridge extension. The Virginia Railway is expected to contract for 2000 tons for bridges. While the 1.40c., Pittsburgh, basis is still shaded, 1.35c. is reported less common on plain material.

Plate mills are running at about 50 per cent. of capacity, and the prospect for betterment is not immediate, unless car orders improve. About 10,000 tons will be needed for the two new battleships.

The market for billets and sheet bars has not been seriously tested, so that the effect here of the firmer tendency in steel making pig iron has not yet been measured.

All pig iron markets report a slight improvement, and in some sections prices show firmness, quite in contrast with the willingness of furnaces a fortnight ago to accept low offers. In the Buffalo district sales of 35,000 to 40,000 tons, chiefly foundry grades, have raised asking prices 25c. to 50c. Southern irons continue to lag behind Northern grades in activity, as $11.50, Birmingham, for No. 2, for which most Alabama sellers are holding where 1911 deliveries are involved, is above the Northern parity in a good many districts.

In the Pittsburgh district considerable inquiry has developed for steel making iron, and both basic and Bessemer are firmer. One buyer has asked for 30,000 tons of Bessemer for the first half of 1911, and a steel foundry has asked for 10,000 tons of basic, while other inquiries amount to 10,000 tons. Bessemer iron is held more firmly at $15, at Valley furnace, and $13.50 is more generally the minimum quotation for basic, while some producers of the latter are keeping aloof from the market at this level.

Railroad Earnings

Inasmuch as there has been an average increase in railroad mileage in the past 10 years of 2.1 per cent. each year, comparisons of total earnings in different years are misleading, for the new mileage is necessarily capitalized and represents fresh investment. Even the statement of earnings per mile does not eliminate all possible error, since by reason of double tracking, increase in the number of cars and locomotives per mile of line, and increase in their capacity per unit, the capital investment per mile of line is, over long periods of time, increasing, and a portion at least of this increase is capitalized. The statement per mile of line, however, is the most indicative of actual conditions of any that can be compiled. The following table shows the total operating revenues and net operating revenue, from rail operations, per mile of road reporting, as given by the reports of the Interstate Commerce Commission since the establishment of the uniform system of accounting on July 1, 1907:

All Roads Reporting, Per Mile of Line, Rail Operations Only.

	1907-8.		1908-9.		1909-10.	
	Gross.	Net.	Gross.	Net.	Gross.	Net.
July	$1,012	$335	$845	$291	$934	$333
August	1,065	373	896	326	1,002	383
September	1,033	348	946	354	1,040	403
October	1,103	368	1,003	383	1,100	439
November	968	291	916	223	1,047	399
December	852	227	887	296	936	288
January	750	180	789	218	888	242
February	703	163	752	212	854	240
March	801	241	888	301	1,007	331
April	763	221	846	268	948	281
May	760	220	865	282	986	301
June	800	260	902	319	996	323
Average	$884	$268	$878	$298	$978	$330

The returns for July last, just published by the Interstate Commerce Commission, are in full as follows:

	Total.	Per mile.
Rail operations:		
Gross	$230,615,776	$969
Net	73,157,547	307
Ratio, per cent	68.28	...
Outside operations:		
Net revenue	$320,042	$1
Operating income	64,746,769	272
Mileage operated	238,168.64	...

The net revenue from outside operations is always light, the items almost balancing. The "operating income" is obtained by taking the net revenue from rail operations, adding the net revenue from outside operations, and deducting one-twelfth the annual taxes. The operating income thus varies from month to month in practically the same manner as the net revenue from rail operations, and these, as given in full for three years in the preceding table, can be studied as indicating net results to the railroads.

The fiscal year 1907-8 opened when traffic was at high tide, the total operating revenue of $1103 per mile of line in October, 1907, being probably the highest in the history of American railroading, although this cannot be stated with certainty, as there are not comparable statistics for previous years. The decrease thereafter was sharp and conclusive, for only four months later, in February, the lowest revenue, $703, for any month in the period was shown.

Before scrutinizing the figures of gross and net revenue in detail, however, it is well to observe their relations with each other. The net is the gross, less operating expenses, and the ratio of operating expenses to gross is called the operating ratio. As it increases the net operating revenue decreases.

The lowest operating ratio in the fiscal year 1907-8 was 64.99 per cent. In the next fiscal year a much lower minimum was reached, 61.80 per cent., in October. Operating ratios have been as follows:

1907-8	69.67	1909-10	66.24
1908-9	66.08	July, 1910	68.28

It will be observed that there has been no wide variation, such as might be surmised from the amount of discussion which has recently been indulged in. The gross and net revenues from rail operations have hung pretty closely together month by month.

Examining the gross revenues in more detail, it will be observed that the average for the fiscal year just ended, $978, well exceeds the average for the preceding fiscal year, and still more the average for the fiscal year 1907-8, which contained four very good months, an average month, and seven poor ones. A thousand dollars a month may well be considered a very good average, for the best month shown was only 10 per cent. in excess of this. The past fiscal year has come very close to showing this average, and so recent a month as March exceeded it, while July just past showed $969. On the whole, then, it must be inferred that railroad gross earnings this year have been running pretty heavy, while there has been a steady and very great increase from the lean months closely following the panic of October, 1907.

The month of heaviest gross operating revenue was October, 1907. In that month the net operating revenue from rail operations was, as seen in the table, $368. That sum, however, was exceeded once in the following fiscal year, and it has been exceeded no less than four times in the fiscal year just ended.

Even the cursory examination of the figures which

has just been given indicates pretty clearly that railroad earnings, whether gross or net, have become quite good in the past year, and the trend since last spring, while slightly downward, is by no means alarmingly so. The most unfavorable feature of the trend at the time of the latest statistics is that — for July last — the gross revenue was quite large, $969, while the net, $307, was relatively small. In a measure this probably represents advanced wages, but there has been so much said, whether rightly or wrongly, about the disposition of railroads to pad their expenses in the past six months that it would be unreasonable to take it for granted that all the figures for the past three years are absolutely comparable.

The stake of the steel industry in railroads has unquestionably changed greatly in the past few years. Going back to the eighties, the prime interest of the iron trade was in railroad building. In 1887 there was an increase of no less than 12,876 miles in the length of railroad in the United States, the average annual increase for the three years 1886-7-8 being 9265 miles. In 1891-2-3 there was another maximum, the average for these three years being 9387 miles. At no subsequent time has the increase in a single year been equal even to two-thirds of either of these averages. The average annual increase in the past ten years has been 4470 miles. In the eighties railroad consumption of iron and steel was chiefly in the building of railroad, and that in the strict sense, for there was so much less business that equipment amounted to much less per mile of line than it does now.

After the industrial depression of 1893-8 the railroad industry began a fresh course of expenditure. In this case the expenditure was not nearly so much for new road as it was for the improvement of existing railroad. Heavy locomotives were bought in large numbers. Light cars were replaced with heavy cars and soon these heavy cars became almost exclusively all-steel and steel underframed cars. Light rails were taken out of track and heavy sections substituted. Existing bridges were replaced by heavier structures. In the spirit which actuated the railroad industry, and in the source of the funds by which the expenditures were paid for, there was little, if any, difference between the movement in the eighties and the recent movement. At the earlier time it was necessary to build track to get to the business, which was increasing, but of late it has not been so necessary to do this as to find equipment to handle the business standing beside the track, for in the country as a whole there is one mile of railroad for every 13 square miles of surface.

These two great movements are past, and it may be that nothing resembling them will occur for years to come, but meanwhile there has come what amounts to practically a new source of demand for railroad material, that arising from its wearing out. At first iron and steel products were required for building; now they are required for upkeep. Comparisons over a long period of years will show that with remarkable steadiness, and subject to really only minor fluctuations, the total ton-mileage of the railroads of the country doubles every 10 years. Thus while in 1887 the production of rails was 2,100,000 tons, more than two-thirds as much as last year's production, the work the rails in track had to perform, irrespective, obviously, of how many miles of them there were, was less than one-fourth of what it is to-day. As with rails, so with locomotives and cars.

A feature of this change in the character of railroad demand which calls for particular attention at this time, in view of the discussion of rates, borrowing power, &c., is that the expenditures for this upkeep are a part of operating expenses, and must be met before net income is ascertained. This the Interstate Commerce Commission requires, the new accounting system setting up depreciation funds for the purpose.

The Economy of Specifying Deliveries

Manufacturers who specify the date of deliveries on all purchases find that a very material saving ensues, amounting at times to the equivalent of an increased working capital. When production exceeds orders the seller is apt to hurry shipments, billing goods as soon as possible, in order that he may receive the money at the earliest moment. Also, he is prone to ship first that which is most convenient for him to produce at the time, regardless of its place in the routine of manufacture of his customer. To take a concrete case: A machinery builder who had placed a general order for the castings of a large lot of heavy machines, received first the counterweights, the very last part required by the assembling room. The bill came with the goods. The outcome was the establishment of the rule of specification of date of shipment. If a lot of castings is needed September 1, that date is specified and a bill dated earlier will be paid only upon the agreed basis. In one instance delivered goods, involving the tidy sum of $5000, specified for October delivery, were billed in August. Were the bill accepted the account would have been settled in September. Under the contract it was paid 60 days later, giving the buyer the use of the money for that considerable length of time. In the long run a working capital has a larger buying power. The rule may even obviate at times the necessity of accommodation from the banks. Its adoption would be worthless, however, excepting when coupled with a complete shop system of keeping track of production, because in order to specify deliveries the date must be foretold with some degree of accuracy.

A Record of Replacement Parts

A record of the replacement of parts is valuable to the machinery builder, both for maintaining a supply of repair parts for customers and as a guide to future design. The weaknesses of a machine are thus tabulated. The experience of the Bullard Machine Tool Company, Bridgeport, Conn., culminated in this system several years ago. Successive replacement orders for a certain pinion were received. They led to the examination of the order files, revealing a hitherto unrealized weakness, for breakages of the part had been more numerous than was necessary. The pinion was replaced by one of a high quality steel, and the orders dwindled. From this as a beginning a careful record of all replacements was maintained by the designing department and has proved of inestimable importance. As models are improved from time to time, such data furnish proof of satisfactory strength or of the need of improvement.

Replacements will always be necessary, no matter how perfect the design of a machine. The fault may

be with the workmen of the customer; and again most machines have their weak points, no matter how great the skill and care of the designer; ultimately, wear is responsible for replacements. The manufacturer is wise if he is always ready to make immediate shipment. It should be an invariable rule to ship on the date of receipt of the order, and relieve the customer of the handicap of an idle machine, since on it may depend the procession of shop operations. Carelessness in such details may be costly when the user is again in the market for machinery.

Parts should always be in stock. To manufacture them without an accurate system is expensive. The record of replacement orders furnishes a basis of calculation for extra parts in sending lots of machines through the works.

Examining Ratings in Buying

The custom is growing of examining credits in buying as well as in selling. The theory is that to establish business relations of any sort with a house which is not founded upon a substantial basis is unwise. The newcomer in a field of industry may be poor in cash but rich in ability and energy and product. An older concern may be rich in tradition and reputation but weak in existing management. Actual rating does not always indicate the desirability or undesirability of beginning relations, either in buying or in selling. As the good sales department watches customers' credits so should the good buyer. The quality of product is often affected by the same conditions which produce financial stress. For staple products many buyers like to tie up with one good house, which learns to understand their wants, and thus avoid much of the trouble and cost of experimenting. In purchasing equipment the certainty that the maker will remain in business is insurance against difficulty in obtaining repair parts.

Correspondence

Single Spaced Correspondence

To the Editor: We are pleased to see your protest against single spaced correspondence, though we are not pleased with the effect of double spacing nor the necessity of too careful calculation in selection of size of sheet for each communication, bulky accumulation of copy, &c. What we would like to see is a space and a half. Can you influence typewriter manufacturers to arrange for this spacing on part if not all of their machines? THE W. J. CLARK COMPANY.

SALEM, OHIO, November 11, 1910.

A member of the Copper Producers' Association says that the charge made last week that the monthly figures of the association are manipulated is false and adds: "The production for October, which was very much larger than was generally expected, is accounted for in part, at least, by a very large contribution to the output by a single refinery. There are refiners here in the East which in the course of business always have between 60,000,000 and 70,000,000 pounds of copper 'in process.' It so happened that the refinery in question carried over from previous months a considerable quantity, which it was able in October to put through the refining process, and it was this abnormal situation which resulted in the extraordinary output as presented in the October statement."

The Steel Corporation Acquires Heroult Patents

The United States Steel Corporation recently exercised options it has had for many months, and which were about to expire, and has acquired the rights for the United States in the Heroult process for electric steel making and refining. As is well known, two 15-ton Heroult furnaces, the largest in use, have been operated for more than a year, one at the South Chicago works of the Illinois Steel Company and the other at the South works, Worcester, Mass., of the American Steel & Wire Company. At South Chicago several thousand tons of rails and a considerable tonnage of axles have been made of electric steel, the Heroult furnace being operated as an adjunct of the Bessemer converter. At Worcester the Heroult furnace has been employed to refine open hearth steel which has entered into wire rope and other high grade wire products. The practice at Worcester has reached a forward stage of development, exceptionally high quality steel being made from ordinary materials. Operations involving the products to which electric steel has been applied at South Chicago are still regarded as in part experimental.

Hickman, Williams & Co.'s Pig Iron Handbook

Hickman, Williams & Co., whose main office is in Louisville, Ky., with branch offices in eight leading cities, have issued the third edition of their pig iron handbook. It is a volume of 159 pages of pocket size, bound in flexible leather. It contains articles on "Effects of Variation in Constituents of Cast Iron," by W. G. Scott; "Metallurgy of the Cupola," by H. E. Field; "Constitution of Pig Iron," by Robert Forsythe; a chapter on constituents of pig iron by H. L. Williams; tables giving approximate analyses for various kinds of castings; tables showing the composition of alloys used in castings; numerous statistical tables are presented on the production and consumption of pig iron; average monthly prices of various kinds of pig iron for a series of years; Lake Superior ore prices and shipments; coke statistics; tariff duties on pig iron and related materials, &c. Numerous analyses are given of special brands of pig iron and coke for which the firm is selling agent. A number of pages are ruled with blanks for the insertion of data on analyses of pig iron and coke.

The Ilgner System in Rolling Mills.—In *The Iron Age* of March 3, 1910, reference was made to the patent litigation then pending in London affecting the Ilgner patent for the electrical driving of reversing rolling mills. The decision of the case, which was brought by the German company controlling the Ilgner patents, against the Electric Construction Company, Ltd. of England, was against the Ilgner patents on the ground of lack of subject matter. An appeal was taken and on October 20 the Court of Appeals at London affirmed the adverse decision. The court held that the only innovation in the Ilgner system for reversible rolling mills was the employment of a heavier flywheel than had been employed in the well-known Ward-Leonard control.

The exhibit of foundry facings, supplies and equipment, the latter including tumbling barrels, molding machines, core ovens and an overhead track system, brass melting furnaces and separators at the Chicago plant of the S. Obermayer Company October 26, was visited by over 400 persons. The educational feature appealed to the instructors of the various technical schools in Chicago who attended with about 100 of their senior students.

The American Steel Foundries

The eighth annual report of the American Steel Foundries, covering the year ending July 31, 1910, shows the following profit and loss account:

Earnings from operation of plants and net income of subsidiary companies (after deducting manufacturing, selling, administrative and head and district office expenses, and before deducting depreciation)		$1,839,984.48
Other income:		
Interest, discount and exchange	$27,556.29	
Income from investments and loans	7,698.67	
Sinking fund profit	2,053.81	
Miscellaneous	18,778.83	
		56,087.60
Total income		$1,896,072.08
Deduct:		
Interest on borrowed money	$33,332.54	
Interest on debentures	137,472.00	
Interest on bonds:		
Outstanding	$176,783.75	
In sinking fund	55,516.25	
	232,300.00	
Bond sinking fund installment and profits	107,053.81	
Depreciation of buildings, plant and equipment (all properties)	355,693.05	
		865,851.40
Balance—net income		$1,030,220.68

The balance sheet as of July 31, 1910, is as follows:

Assets.		
Real estate, buildings, plant, machinery, tools, equipment, patents and goodwill:		
As per balance sheet of July 31, 1909	$19,961,095.36	
Additions during the year	598,854.87	
	$20,559,950.23	
Real estate not used for business purposes	298,630.15	
		$20,858,580.38
Sinking fund assets (exclusive of bonds purchased and held by trustees):		
Cash and accrued interest		64,628.26
Securities:		
Notes secured by first mortgage	$40,000.00	
Miscellaneous securities	139,264.08	
	$179,264.08	
Inventories	$2,206,120.75	
Accounts and bills receivable (less reserves)	3,642,878.33	
Cash	645,463.67	
		6,673,726.83
Insurance premiums, &c., prepaid		36,285.33
Total		$27,633,220.80
Liabilities.		
Capital stock (authorized and issued), 171,840 shares of $100 each		$17,184,000.00
Bonds and debentures:		
First mortgage 6 per cent 10-30 year sinking-fund gold bonds	$3,500,000.00	
Less redeemed and held by trustees of sinking fund	976,000.00	
	$2,523,500.00	
First mortgage 5 per cent. gold bonds of American Steel Casting Company (due November 1, 1912)	446,000.00	
Four per cent. debentures	3,436,800.00	
		6,406,300.00
Accounts payable	$1,154,407.56	
Payroll accrued	236,442.91	
Accrued interest on bonds and debentures	144,311.00	
Dividend No. 2 (payable August 15, 1910)	214,800.00	
		1,749,961.47
Depreciation and renewal reserves		1,120,105.18
Bond sinking fund (accrued since August 1, 1907)		493,941.94
Profit and loss account:		
As per balance sheet of July 31, 1909	$78,291.53	
Net income for the year ending July 31, 1910, as per annexed statement	1,030,220.68	
	$1,108,512.21	
Deduct dividends No. 1 and No. 2 for the quarter-years ending April 30 and July 31, 1910	429,600.00	
		678,912.21
Total		$27,633,220.80

President Kelley's Comments

The statement of President Wm. V. Kelley says in part:

The gross sales for the year were $17,173,740.98 and the gross earnings from operations of plants and other income after deducting manufacturing, selling, administration, head and district office expenses and management commissions, were $1,896,072.08. The net income of $1,030,220.68 applicable to surplus shown in the balance sheet, is the remainder after deducting all interest and other charges, including $1,199,983 for repairs and maintenance and $355,693.05 for depreciation of fixed properties and also after appropriating $162,570.06 for the sinking fund for the company's first mortgage bonds. The sinking fund appropriation, while properly charged against income, is in reality a setting aside of profits for liquidating the bonded debt, and the retirement of bonds from the fund benefits stockholders by increasing the value of the company's property.

From the bond sinking fund $138,500 par value of first mortgage bonds were bought and retired during the year and the balance of the accretions to the fund, together with the annual installment paid to the trustee October 1, will purchase at least $178,500 more, making the total retired or provided for to date $1,155,000, out of the original issue of $3,500,000.

Charges aggregating $598,854.87 were made to the capital account during the year, for real estate, new construction, additions, machinery and equipment, care being taken that only such charges were made as materially increased the value of the company's property and were not properly chargeable elsewhere. In addition, the further sum of $300,582.10 was spent for replacements and for minor additions and improvements and charged to the depreciation reserve.

An opportunity occurred to secure additional land adjoining the Alliance plant, and as the trend of business indicates the necessity of much greater productive capacity in that locality and as the opportunity was not likely to be repeated, advantage was taken of it and the land acquired at a reasonable price. It is not intended at present to improve the property, but use it as a convenience in the operations of the present plant. At Indiana Harbor a new plant for the production of light weight castings has been completed and put into successful operation with the result of lowering costs and increasing the output of the entire plant. A tract of land adjoining the company's property at the same plant came into the market at a very attractive price, and as its use is very desirable to facilitate the plant's operations it was purchased.

Since the close of the fiscal year shipments and earnings have been satisfactory, but orders on hand have shown a steady decrease from month to month for several months, and there is as yet no definite betterment in sight, although there is a decided change in sentiment, and the opinion seems to be that better business conditions will prevail within a short time.

Since the five-year contract with the president and the three vice-presidents of the company, under which they share in the profits in excess of a fixed sum, expired July 31, 1910, the annual report gives a review of the five-years' record. Prior to August 1, 1905, the company's largest 12-months' shipments did not exceed 120,000 tons. For the 12 months ending September 30, 1910, shipments were over 205,000 tons, the largest month's shipments being somewhat less than 20,000 tons, so that present capacity may be taken at not less than 220,000 tons, or an increase of about 70 per cent. The financial operations of the five years are also reviewed. The capital expenditures in the five years were $1,710,135 and the depreciation reserves $1,432,307. The capital charges cover a new plant at Pittsburgh, new plant and equipment at Indiana Harbor, additional land at Alliance, Indiana Harbor and Hammond, and new buildings, additions and equipment at various plants. The gross sales for the five years were $68,036,955 and the net earnings $4,497,131. The net earnings, together with the profits paid into the sinking fund—$727,899—make a total for the five years of $5,225,030.

The largest shipment of tin plate ever received in Texas arrived at Port Arthur, Texas, recently, consigned to the Texas Company. It will be used for casing oil at the refinery of the company at Port Arthur. The tin plate came from Swansea, England, and the duty on the shipment amounted to $25,000.

The Cincinnati Iron & Steel Company denies the press dispatches saying that it has leased the mill of the Hazleton Sheet Steel Company at Hazleton, Pa.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Nov. 16, 1910.	Nov. 9, 1910.	Oct. 19, 1910.	Nov. 17, 1909.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	$15.75	$15.75	$15.75	$19.00
Foundry No. 2, Southern, Cincinnati	14.25	14.25	14.25	17.75
Foundry No. 2, local, Chicago	16.00	16.00	16.00	19.00
Basic, delivered, eastern Pa.	*14.75*	14.75	15.00	18.50
Basic, Valley furnace	**13.25**	13.25	13.00	17.25
Bessemer, Pittsburgh	15.90	15.50	15.90	19.90
Gray forge, Pittsburgh	14.15	14.15	14.15	17.40
Lake Superior charcoal, Chicago	18.00	18.00	18.00	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	23.50	23.50	23.50	27.00
Forging billets, Pittsburgh	*28.50*	28.50	29.00	31.00
Open hearth billets, Philadelphia	*25.50*	26.00	26.00	30.60
Wire rods, Pittsburgh	*28.00*	28.00	28.50	33.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	13.50	13.50	13.50	17.25
Steel rails, melting, Philadelphia	*13.50*	13.50	13.75	18.00
Iron rails, Chicago	16.00	16.00	16.00	20.50
Iron rails, Philadelphia	18.00	18.00	18.00	21.00
Car wheels, Chicago	*13.50*	13.50	14.00	18.50
Car wheels, Philadelphia	13.75	13.75	13.75	17.50
Heavy steel scrap, Pittsburgh	14.25	14.25	14.25	17.50
Heavy steel scrap, Chicago	12.25	12.25	12.25	16.00
Heavy steel scrap, Philadelphia	*13.50*	13.50	13.75	18.00
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Bessemer steel rails, heavy, at mill	1.25	1.25	1.25	1.25
Refined iron bars, Philadelphia	*1.37*	1.37	1.40	1.65
Common iron bars, Chicago	1.35	1.35	1.35	1.55
Common iron bars, Pittsburgh	1.45	1.45	1.45	1.70
Steel bars, tidewater, New York	1.56	1.56	1.56	1.66
Steel bars, Pittsburgh	1.40	1.40	1.40	1.50
Tank plates, tidewater, New York	1.56	1.56	1.56	1.71
Tank plates, Pittsburgh	1.40	1.40	1.40	1.55
Beams, tidewater, New York	1.56	1.56	1.56	1.71
Beams, Pittsburgh	1.40	1.40	1.40	1.55
Angles, tidewater, New York	1.56	1.56	1.56	1.71
Angles, Pittsburgh	1.40	1.40	1.40	1.55
Skelp, grooved steel, Pittsburgh	*1.25*	1.25	1.30	1.55
Skelp, sheared steel, Pittsburgh	*1.35*	1.35	1.40	1.60
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh*	1.70	1.70	1.70	1.80
Cut nails, Pittsburgh	*1.60*	1.60	1.65	1.80
Barb wire, galv., Pittsburgh*	2.00	2.00	2.00	2.10
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	**13.00**	13.00	12.87½	13.25
Electrolytic copper, New York	**12.87½**	12.87½	12.80	13.00
Spelter, New York	**5.95**	5.95	5.60	6.30
Spelter, St. Louis	**5.80**	5.80	5.45	6.15
Lead, New York	4.40	4.40	4.40	4.40
Lead, St. Louis	**4.30**	4.30	4.27½	4.25
Tin, New York	*36.50*	36.25	37.62½	30.75
Antimony, Hallett, New York	7.75	7.75	7.75	8.25
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.84	$3.84	$3.84	$3.84

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought boiler tubes.

Structural Material.—I-beams and channels, 3 to 15 in., inclusive, 1.40c. to 1.45c., net; I-beams over 15 in., 1.50c. to 1.55c., net; H-beams over 8 in., 1.55c. to 1.60c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.40c. to 1.45c., net; angles over 6 in., 1.50c. to 1.55c., net; angles, 3 in., on one or both legs, less than ¼ in. thick, 1.45c., plus full extras as per steel bar card, effective September 1, 1909; tees, 3 in. and up, 1.40c. to 1.45c., net; zees, 3 in. and up, 1.40c. to 1.45c., net; angles, channels and tees, under 3 in., 1.45c., base, plus full extras as per steel bar card of September 1, 1909; deck beams and bulb angles, 1.70c. to 1.75c., net; hand rail tees, 2.50c.; checkered and corrugated plates, 2.50c., net.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.40c. to 1.45c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, 1.60c.; Nos. 9 and 10, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 1.85c. One pass, cold rolled, box annealed sheets: Nos. 10 and 11, 1.85c.; Nos. 12 to 14, 1.90c.; Nos. 15, 16 and 17, 1.95c.; Nos. 18 to 21, 2c.; Nos. 22, 23 and 24, 2.05c.; Nos. 25 and 26, 2.15c.; Nos. 27 and 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.25c. Three pass, cold rolled sheets, box annealed, are as follows: Nos. 15 and 16, 2.05c.; Nos. 17 to 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; No. 27, 2.25c.; No. 28, 2.30c. Galvanized sheets, Nos. 10 and 11, 2.20c.; Nos. 12, 13 and 14, 2.30c.; Nos. 15, 16 and 17, 2.45c.; Nos. 18, 19, 20 and 21, 2.60c.; No. 22, 2.60c.; Nos. 23 and 24, 2.70c.; Nos. 25 and 26, 2.90c.; No. 27, 3.05c.; No. 28, 3.20c.; No. 29, 3.30c.; No. 30, 3.50c. Painted roofing sheets, No. 28, $1.55 per square. Galvanized sheets, No. 28, $2.75 per square for 2½-in. corrugations. All above prices are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount 10 days from date of invoice.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 1:

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
Butt Weld.				
⅛, ¼, ⅜ in.	72	58	68	54
½ in.	75	63	71	59
¾ to 1½ in.	79	69	75	65
2 to 3 in.	80	70	76	66
Lap Weld.				
2 in.	76	66	72	62
2½ to 4 in.	78	68	74	64
4½ to 6 in.	77	67	73	63
7 to 12 in.	75	59	71	55
13 to 15 in.	51½	..	..	..
Butt Weld, extra strong, plain ends, card weights.				
⅛, ¼, ⅜ in.	69	59	65	55
½ in.	74	68	70	64
¾ to 1½ in.	78	72	74	68
2 to 3 in.	79	73	75	69
Lap Weld, extra strong, plain ends, card weight.				
2 in.	75	69	71	65
2½ to 4 in.	77	71	73	67
4½ to 6 in.	76	70	72	66
7 to 8 in.	69	59	65	55
9 to 12 in.	64	54	60	50
Butt Weld, double extra strong, plain ends, card weight.				
¼ in.	64	58	60	54
¾ to 1½ in.	67	61	63	57
2 to 3 in.	69	63	65	59
Lap Weld, double extra strong, plain ends, card weight.				
2 in.	65	59	61	55
2½ to 4 in.	67	61	63	57
4½ to 6 in.	66	60	62	56
7 to 8 in.	59	49	55	45

THE IRON AND METAL MARKETS

		Plugged and Reamed.
1 to 1½, 2 to 3 in.	Butt Weld	Will be sold at two (2) points lower basing (higher price) than merchant or card weight pipe, Butt or Lap Weld as specified.
2, 2½ to 4 in....	Lap Weld	

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in	49	43
1¾ to 2¼ in	61	43
2½ in	63	48
2¾ to 3 in	69	55
3 to 13 in	61	43

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads to destinations east of the Mississippi River will be sold at delivered discounts for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer rods, $28; open hearth and chain rods, $28.50.

Steel Rivets.—Structural rivets, ¾ in. and larger, 1.90c., base; cone head boiler rivets, ¾ in. and larger, 2c., base; ⅝ in. and 11-16 in. take an advance of 15c., and ½ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

Pittsburgh

PARK BUILDING, November 16, 1910.—(*By Telegraph.*)

Pig Iron.—Inquiries are reported in the market for 45,000 to 50,000 tons of Bessemer and basic iron, mostly for delivery in the first half of next year. One consumer is reported to be inquiring for upward of 30,000 tons of standard Bessemer iron for first half. The American Steel Foundries is in the market for 10,000 tons of basic for its Alliance, Ohio, plant; another Western consumer for several thousand tons of basic, and there are other inquiries. For standard Bessemer iron for first half, the lowest price being quoted is $15, Valley furnace, and 1500 tons is reported to have been sold at this price for first half delivery, the iron to be used in making ingot molds. A sale is also reported of 500 tons of standard Bessemer for December and January at $15, at Valley furnace. A Valley furnace interest has sold 3000 tons of basic for first half at about $13.25, at furnace, and a sale of 500 tons of basic has been made at $13.75, Valley furnace, the sulphur and phosphorus running slightly lower than in ordinary basic. We quote for delivery in the first quarter and first half of next year as follows: Standard Bessemer iron, $15; malleable Bessemer, $13.75; basic, $13.25 to $13.50; gray forge, $13.25, and No. 2 foundry, $13.75 to $14, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

Steel.—There is a fair amount of new inquiries for billets, sheet and tin bars, but mostly for shipment in this and next month. Several large makers of sheets and tin plate who buy bars under sliding scale contracts are reported negotiating for their supply for first quarter of next year. On account of the firmer feeling in Bessemer and basic pig iron the opinion prevails that prices on steel are now probably as low as they will go. We quote Bessemer and open hearth billets at $23.50 to $24; Bessemer and open hearth sheet and tin plate bars, $24.50 to $25, and forging billets, $28.50 to $29, all f.o.b. Pittsburgh, Youngstown or Wheeling district.

(*By Mail.*)

The report of sales of standard Bessemer iron at $14.60 to $14.75, at Valley furnace, for delivery in first half of next year, printed last week, has caused comment in the trade, and attempts have been made to discredit the correctness of these sales and the prices. One statement widely published was that the only sale located was one of 1000 tons of off-Bessemer iron, running up to 0.12 per cent. phosphorus and as high as 0.08 per cent. sulphur. This iron was reported to have been sold at $14.60, Valley furnace. A Valley furnace in the early part of this month did sell to a consumer in this city 600 tons of off-Bessemer iron for forward delivery at $14, Valley furnace. The iron was of standard Bessemer grade, except that sulphur was allowed up to 0.08 per cent.; many furnaces would sell this as malleable Bessemer. However, our report last week of sales of 6000 tons or more of standard Bessemer iron for delivery in first half of 1911 as low as $14.60, Valley furnace, was absolutely correct in every way. The iron was standard Bessemer, phosphorus not to exceed 0.10 per cent. and sulphur not to exceed 0.05 per cent. Further, more than a month ago sales of standard Bessemer iron were made below $15, Valley furnace; in fact, $14.75, at furnace, was shaded. Considerable new inquiry for pig iron has developed in the past week, and prices on standard Bessemer iron are firmer and higher than last week. One consumer is reported to be inquiring for 30,000 tons of standard Bessemer iron for first half; a steel casting interest is in the market for 10,000 tons of basic for delivery at Alliance, Ohio, and in all there are inquiries out for more than 50,000 tons of Bessemer and basic, all for delivery in first quarter and first half of next year. A local furnace interest sold last week 1500 tons of standard Bessemer iron to an Eastern consumer at $15, Valley furnace, deliveries being 250 tons a month for first half of next year. A sale of 500 tons of basic iron running lower in sulphur and phosphorus than regular basic analysis has been made at $13.75, at Valley furnace, but this price is above the actual market on basic. A sale was also made of 3000 tons of basic for first half by a Valley furnace for forward delivery, at about $13.25, at furnace. The market on Bessemer and basic iron is firmer, and on several large inquiries now pending $15, at Valley furnace, for Bessemer and $13.25 to $13.50 for basic are the lowest quotations that have been made. Several Valley furnaces are quoting $15.50 for second quarter on Bessemer iron, and as high as $16, at furnace, for Bessemer for second half of next year delivery. There is not much new inquiry for steel billets, sheet or tin bars, but the impression prevails that prices are probably as low as they will go, in view of the firmer feeling in Bessemer and basic iron. New inquiry for finished iron and steel continues light, consumers steadily pursuing the policy of placing orders only to cover actual needs, and there is no desire to contract ahead. It is not believed there will be much material change in the iron market for the balance of this year, as we are close to the holiday season, when there is usually a slow-down in operations to take inventory and close up the year's business. There is some inquiry out for furnace and foundry coke for first half, with some low prices being made. Scrap is only fairly active, with prices inclined to weakness.

Ferromanganese.—The lowest prices of the year are being quoted on 80 per cent. foreign ferro, for delivery in first half. One recent sale of about 1200 tons, deliveries 200 tons a month for first half, is reported to have been made at very close to $38, Baltimore. We quote the market on foreign 80 per cent. ferro for first half delivery at $38.50, Baltimore, but on a firm offer and for large tonnage, this price might be shaded. The rate from Baltimore on ferromanganese is $1.95 a ton for delivery in Pittsburgh district.

Ferrosilicon.—There is not much new inquiry, and 50 per cent. ferrosilicon for prompt shipment continues somewhat scarce, and is bringing slightly higher prices than material for forward delivery. We quote 50 per cent. for delivery over the first six months of next year at $55 to $55.50, and for prompt delivery at $56 to $56.50. We quote 10 per cent. blast furnace silicon at $23; 11 per cent., $24; 12 per cent., $25, f.o.b. cars, Jisco and Ashland furnaces.

Skelp.—No new sales of either iron or steel skelp have been made in this market since the last report, and prices are only fairly strong. We quote grooved steel skelp, 1.25c. to 1.30c.; sheared steel skelp, 1.30c. to 1.35c.; grooved iron skelp, 1.60c. to 1.65c., and sheared iron skelp, 1.70c. to 1.75c., all for delivery at consumers' mills in the Pittsburgh district, usual terms.

Rods.—The quiet condition existing in the wire nail and wire trades is reflected in rods, new demand for which is quiet, and for small lots only. We continue to quote Bessemer rods at $28 to $28.50, and open hearth and chain rods at $28.50, Pittsburgh.

Muck Bar.—No new sales of muck bar have been made in this market in the past week or two, and the recent reduction of 25c. a ton in puddling may have the effect of bringing slightly lower prices for bar. Local makes of best grades of muck bar, made from all pig iron, are held at about $30, delivered, buyer's mill, Pittsburgh, while Eastern muck bar is being offered here at $29 or less, delivered.

Steel Rails.—New buying of rails by the railroads has started in a small way, but the actual tonnage that will be placed by the railroads will not be as large as expected. The Erie Railroad has bought 33,000 tons, divided between several mills, and the Pennsylvania Railroad and several other systems are expected to come in the market any day with contracts. It is known that several leading roads have made up their schedules of rails needed for next year, and the Norfolk & Western is expected to place its contract this week. It will probably amount to from 30,000 to 35,000 tons. New demand and specifications against contracts on light rails continue good. The Carnegie Steel Company booked a nice tonnage in the past week. Under the arrangement recently made for quoting rails on a per pound basis, quotations on light rails are now as follows: 12-lb. rails, 1.25c.; 16, 20 and 25 lb., 1.21c. to 1.25c.; 30 and 35 lb., 1.20c., and 40 and 45 lb., 1.16c. These prices are f.o.b. at mill, plus freight, and are absolutely minimum of the market on carload lots, small lots being sold at a little higher price. We quote standard sections at 1.25c. per pound.

THE IRON AND METAL MARKETS

Plates.—Inquiries for the plates for the two battleships, one to be built by the Government at Brooklyn, and the other by one of the ship yards, have not yet reached the mills, but are expected to do so about December 1. These two boats will each take about 10,000 tons of plates and shapes, and part of this tonnage will likely come to local mills. No car orders of moment have been placed in the past week, but the Pittsburgh, Shawmut & Northern is in the market for about 3000 steel cars, some locomotives and other equipment, which will likely be placed at an early date. The whole plate market continues very quiet, and all the plate mills are badly in need of orders. They are running only part time, probably to not over 50 per cent. of capacity. The local market on ¼-in. and heavier plates in the wider sizes is 1.40c., Pittsburgh, but this is being shaded as a base price for delivery in certain districts. Narrow plates are still being sold at 1.35c., at mill.

Structural Material.—While some large jobs are in the market, they are very slow in coming out. The McClintic-Marshall Construction Company has taken about 2000 tons of bridge work, and the American Bridge Company two contracts involving about 1800 tons. It is probable a good deal of large work, originally scheduled for this year, will now go over into next year on account of the lateness of the season. We continue to quote beams and channels up to 15-in. at 1.40c., f.o.b. Pittsburgh.

Sheets.—New inquiry for sheets continues fairly active, but the mills have sold a good deal of tonnage for delivery over balance of this year, and into first quarter of next year. Prices on the whole are fairly strong, but in certain sections and to meet competition of two or three mills, prices are slightly shaded. The market on sheets is on the basis of 2.20c. for No. 28 one pass black sheets and 3.20c. for No. 28 galvanized, but in some cases, on nice specifications, these prices are shaded $1 a ton. The full schedule of prices in effect on black and galvanized and on roofing sheets is given on a previous page.

Tin Plate.—New demand for tin plate in the past two weeks has been more active, and two or three of the largest can companies have recently covered their requirements for bright plate for first half of next year. Deliveries on these contracts will start next spring, and, while output of tin plate has been very materially curtailed recently, it is not unlikely a part of the idle capacity may be started in the near future. The market on tin plate is reported firm, and we continue to quote 100-lb. cokes at $3.60 per base box, f.o.b. Pittsburgh.

Bars.—Specifications on steel bars are not coming in as freely as desired, some concerns holding back from specifying in the belief that later on the market may be a little lower. So far, however, the leading steel bar mills have steadily maintained their price of 1.40c. on steel bars, except for delivery in certain districts, notably in Chicago, where this price is shaded as a basing price. Prices on iron bars are weaker, and the recent settlement of the puddling scale for November and December was on a 1.35c. basis for iron bars. We quote soft steel bars at 1.40c. in large lots and common iron bars at 1.40c. to 1.45c., Pittsburgh.

Hoops and Bands.—A leading consumer of hoops is reported in the market for its entire requirements for first half, and this tonnage will likely go to a local mill, which has been favored with this business for some years past. New demand for hoops and bands is mostly in small lots to cover current needs, but specifications against contracts are coming in at a fairly satisfactory rate. We quote hoops at 1.50c. in large lots, and 1.55c. in small lots; bands, 1.40c. in carload and larger lots, and 1.45c. in small lots, the latter carrying extras as given in the steel bar card dated September 1, 1909.

Cotton Ties.—Most contracts entered by the mills early in the year for cotton ties have been cleaned up, but a few belated specifications are still being received. We quote cotton ties at 77½c. per bundle, f.o.b. Pittsburgh, for November shipment.

Spikes.—New demand for railroad spikes continues quiet, and is mostly for small lots for repair work. Now that the railroads are showing some inclination to place orders for steel rails, it is believed new demand for railroad spikes will improve in the near future. We quote standard sizes of railroad spikes at 1.50c. to 1.55c. for Western shipment and 1.55c. to 1.60c. for local trade. We quote small railroad and boat spikes at 1.60c. to 1.65c., base, in carload and larger lots.

Rivets.—There is a moderate new demand mostly in small lots to cover current needs, but specifications against contracts are only fair. Regular prices, which are 1.90c. for structural rivets and 2c. for boiler rivets, are still being shaded.

Spelter.—In spite of the quiet new demand, the high prices ruling for spelter for some weeks are maintained. We quote best grades of spelter at 5.80c. to 5.85c., East St. Louis, equal to 5.92½c. and 5.97½c., Pittsburgh.

Merchant Steel.—New demand continues light and is only for small lots to cover actual needs. One leading mill reports that so far this month its specifications against contracts have been slightly better than in the same period last month. We quote, f.o.b. Pittsburgh: Iron finished tire, 1½ x ½ in. and heavier, 1.40c., base; under these sizes, 1.55c.; planished tire, 1.60c.; channel tire, 1.80c., base; toe calk, 1.95c.; flat sleigh shoe, 1.55c.; concave or convex, 1.75c.; cutter shoes, tapered or bent, 2.25c.; spring steel, 2c.; machinery steel, smooth finish, 1.90c.

Shafting.—There is decided improvement in specifications against contracts for shafting, two local makers reporting that shipments against orders so far this month have been somewhat in excess of the same period in October. It is stated that regular discounts are being fairly well maintained, and are 55 per cent. off in carload and larger lots, and 50 per cent. off in small lots, delivered in base territory. On desirable contracts and for large lots 55 and 5 per cent. is being named.

Wire Products.—New demand for wire nails and wire products is only fair, being confined mostly to small lots to cover actual needs. Neither jobbers or consumers are showing much desire to contract ahead, but specifications against orders placed some time ago are coming in quite freely. The American Steel & Wire Company is reported to be operating to about 80 per cent. of capacity, while the leading independent mill reports that it is able to run practically full. Announcement is made that the Pittsburg Steel Company, the largest independent maker of wire rods, wire nails and Pittsburgh fencing, will build possibly three blast furnaces at Monessen, Pa., where its mills are located. We quote galvanized barb wire at $2; painted, $1.70; annealed fence wire, $1.50; galvanized, $1.80; wire nails, $1.70, and cut nails, $1.60, in carload and larger lots, all f.o.b. Pittsburgh, freight to destination being added.

Merchant Pipe.—Two or three fairly large inquiries for line pipe for gas and oil lines are in the market, and may possibly be given out within the next week or 10 days. It is also stated that the long-talked of project of the Everett-Busch Syndicate of St. Louis to pipe gas from the Louisiana fields into St. Louis has again been revived and may be put through before long. New demand for merchant pipe is coming in quite freely, and the mills are entering more actual orders for pipe for prompt shipment than usual at this season of the year. We are advised that discounts on both iron and steel pipe, printed on a previous page, are being maintained.

Boiler Tubes.—There is no improvement to note in the boiler tube trade, either in demand or prices, both of which have been very unsatisfactory to the mills during practically all of this year. Discounts on both iron and steel boiler tubes continue to be materially shaded.

Iron and Steel Scrap.—Not much new business is being placed by consumers of scrap and the whole market continues quiet. There is a fairly active demand for heavy steel scrap for open hearth purposes, and also for borings and turnings, but in the other grades of scrap very little is doing. Dealers quote about as follows, per gross ton, for delivery in the Pittsburgh district or elsewhere, as noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$14.25 to $14.50
No. 1 foundry cast	13.00 to 13.25
No. 2 foundry cast	12.50 to 12.75
Bundled sheet scrap, at point of shipment	9.00 to 9.50
Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.	15.75 to 16.00
No. 1 railroad malleable scrap	13.50 to 13.75
Grate bars	11.25 to 11.50
Low phosphorus melting stock	17.25 to 17.50
Iron car axles	24.50 to 24.75
Steel car axles	21.25 to 21.50
Locomotive axles	24.50 to 25.00
No. 1 busheling scrap	12.00 to 12.25
No. 2 busheling scrap	8.50 to 8.75
Old car wheels	13.75 to 14.00
Sheet bar crop ends	15.50 to 15.75
Cast iron borings	8.00 to 8.25
Machine shop turnings	8.75 to 9.00
Old iron rails	16.00 to 16.25
No. 1 wrought scrap	15.00 to 15.25
Stove plate	11.75 to 12.00
Heavy steel axle turnings	10.25 to 10.50

We note sales of about 2000 tons of cast iron borings on the basis of $8.25, f.o.b. Pittsburgh; also about 1000 tons of turnings at $8.75, Pittsburgh, and about 1000 tons of heavy steel scrap at $14.25 to $14.50, delivered.

Coke.—The coke trade continues in very unsatisfactory condition, and it has been plainly evident for some time that too much coke is being made and that output will have to be materially restricted before any improvement in either in demand or prices can be reasonably expected. Standard makes of furnace coke for prompt shipment, that is, loaded

THE IRON AND METAL MARKETS

on cars, which must be moved, has been offered in the past week as low as $1.50 in net tons at oven. Output of coke in the Upper and Lower Connellsville regions last week was 340,556 tons, a decrease of nearly 5000 tons over the previous week. We quote standard makes of furnace coke for prompt shipment at $1.50 to $1.55, and for delivery over the first half of next year at about $1.75 per net ton, at oven. We quote standard makes of 72-hour foundry coke at $2 to $2.10 for prompt shipment and $2.25 up to $2.50 on contracts per net ton, at oven, for first half of next year.

The United Steel Company of Canton, Ohio, has opened an office in room 518, Park Building, Pittsburgh, Pa., in charge of E. B. Blandy. Mr. Blandy for some years was sales manager of the Tennessee Coal, Iron & Railroad Company in New York City.

Chicago

FISHER BUILDING, November 6, 1910.—(*By Telegraph.*)

The Chicago market shows decided improvement the past week. Specifications for bars, plates and structural shapes have been better than at any time in three or four months. The 1.35c. price on these finished materials has practically disappeared, and the mills which have been holding for 1.40c. are getting business of a class which they were losing a few weeks ago. Car shops are beginning to specify for round lots of plates and shapes, one lot of 1200 tons and another of 1400 tons having been booked within a few days. While these orders are small for car material they reflect an improvement in the demand from car builders, and it is understood that orders for a large number of cars are in prospect which have not reached the stage of mill specifications for the material. A Western shop will furnish the under frames for 1000 steel cars ordered by the New York Central. The order for over 4000 cars for the Hawley lines was practically awarded a few days ago, but a hitch occurred regarding the specifications and the final disposition of the order is not yet reported in this market. Manufacturers of special lines of railroad equipment are figuring on good contracts. Rail sales booked by Chicago mills last week amounted to 22,000 tons. The railroad malleable foundries evidently have more business in prospect as they are inquiring for pig iron and buying more scrap. One manufacturer of railroad equipment recently bought a round lot of steel from store in Chicago in order to obtain immediate delivery. A serious car shortage is reported in the South, and in Chicago territory the situation is tightening. Leading trunk lines are refusing large shipments because they cannot furnish cars, and complaints of shortage are becoming more general. The weather has been very favorable for moving freight, and the railroads have been handling more traffic than a year ago. An early winter or a little dry snow will have serious results in this territory, as it would restrict general business and cause as disastrous a car shortage as four years ago. This, however, would force heavy buying of cars and motive power.

Pig Iron.—The buying movement in pig iron in this territory continues to broaden out and the Northern furnace interests have booked a number of sales of round lots for first quarter and first half. There have also been good sales of charcoal iron to car shops and railroads. Several malleable foundries are in the market for round lots for first quarter or first half, one Milwaukee foundry wanting 5000 tons of malleable Bessemer and others inquiring for smaller lots. Inquiries from malleable foundries are significant, as the larger foundries are carrying iron which they bought last winter. There is a good general demand from foundries for Northern iron and furnace stocks are beginning to decrease. The inquiry for Southern iron does not reach so large a tonnage, but is improving. One local foundry has inquired for 3000 tons of Southern and there are several inquiries for 1000 tons each. There is a good buying movement in moderate sized lots of 100 to 1000 tons. For prompt shipment both Tennessee and Alabama brands are going at $11 to the end of the year, and some furnaces which were willing to take business for first quarter at this price are now asking $11.50. The low prices of Northern foundry iron and scrap have a tendency to restrict the purchase of Alabama iron in this territory, as a large number of foundries can use a mixture of Northern and scrap at a cost of less than $15 per gross ton, delivered. The foundries which require high phosphorus and high silicon iron have been buying principally Tennessee brands. The market for Southern grades will, therefore, be restricted until the buying movement in Northern iron has raised the price level. The car shortage in the South is reported so severe that furnaces are using gondola cars. Local furnaces are unable to keep up with their shipping orders for lack of cars. The following quotations are for November and December shipment, Chicago delivery:

Lake Superior charcoal	$18.00 to $18.50
Northern coke foundry, No. 1	16.50 to 17.00
Northern coke foundry, No. 2	16.00 to 16.50
Northern coke foundry, No. 3	15.75 to 16.00
Northern Scotch, No. 1	17.00 to 17.50
Southern coke, No. 1	15.85 to 16.35
Southern coke, No. 2	15.35 to 15.85
Southern coke, No. 3	15.10 to 15.60
Southern coke, No. 4	14.85 to 15.35
Southern coke, No. 1 soft	15.85 to 16.35
Southern coke, No. 2 soft	15.35 to 15.85
Southern gray forge	14.60 to 15.10
Southern mottled	14.60 to 15.10
Malleable Bessemer	16.00 to 16.50
Standard Bessemer	17.40 to 17.90
Jackson Co. and Kentucky silvery, 6%	19.40 to 19.90
Jackson Co. and Kentucky silvery, 8%	20.40 to 20.90
Jackson Co. and Kentucky silvery, 10%	21.40 to 21.90

(*By Mail.*)

Billets.—The market continues at $28, Chicago, for forging billets, and is somewhat firmer than a month ago.

Rails and Track Supplies.—The Illinois Steel Company booked an order for 15,000 tons of open hearth rails last week and another for 2500 tons of open hearth, with scattering lots of Bessemer and open hearth which made a total of about 22,000 tons. The principal Western railroads are preparing estimates of their requirements, but have not yet submitted definite inquiries to the mills. Important developments in the rail trade are expected within the next month. The track supply departments are running light at present on new business as the buying season in this line is about over for this year and specifications for 1911 business have not come in. We quote standard railroad spikes at 1.70c. to 1.75c., base; track bolts with square nuts, 2.25c. to 2.30c., base, all in carload lots, Chicago. Light rails, 40 to 45 lb., $26; 30 to 35 lb., $26.75; 16, 20 and 25 lb., $27; 12-lb., $28, Chicago.

Structural Material.—The structural mills are doing better than the fabricating interests in getting new business, as they are beginning to receive specifications from car builders. Specifications and new buying of plain material have shown so much improvement that the 1.35c. price has practically disappeared from the market. Several large buildings in Chicago are held up awaiting a new building ordinance on which action is expected this week. The proposed new code permits an increase from 16,000 to 18,000 lb. in the stresses on steel members, and makes slight modifications in other respects in the legal requirements of a steel structure, especially in high buildings. This will reduce the amount of steel used and the cost, and is in line with the legal requirements that have proved safe in other cities. For some time the architects who handle steel buildings have been making their specifications conform to the proposed new code, and all work of this class is, therefore, held up until it is adopted by the City Council. Bids will soon be asked on a new theatre on Clark street, which will require about 4500 tons. The American Bridge Company has taken two small orders for bridge work, one from the Chicago, Milwaukee & St. Paul for 240 tons and one from the Oklahoma Central for 140 tons. A power house at Omaha for the Omaha Electric Light & Power Company, 460 tons, was let to Paxton, Vierling & Co. of that city. A stamp mill for the Nevada Hills Mining Company, Nevada, 300 tons, was booked by the American Bridge Company. The Supreme Court of Arkansas has given a favorable decision on questions in dispute regarding a bridge across the Arkansas River at Fort Smith which requires 4600 tons. The contract for this bridge was let to the American Bridge Company last summer, and work will go forward at once. We quote plain material from mill, 1.58c. to 1.63c., Chicago; from store, 1.80c. to 1.90c., Chicago.

Plates.—The plate business is picking up and good specifications are coming in from car building shops as well as from the car repair shops of the railroads. One order taken last week from a car shop was for 1200 tons and another for 1400 tons. While no large car orders or inquiries are reported from Western railroads, small lots of cars are being ordered from time to time. The New York Central has placed contracts for 1000 steel underframe freight cars, and a Davenport, Iowa, plant will furnish the special shapes for the underframes, using Bethlehem shapes. We quote mill prices at 1.58c. to 1.63c., Chicago; store prices, 1.80c. to 1.90c., Chicago.

Sheets.—Sheet business is holding up in a very satisfactory manner and there is a good run of orders from both manufacturing and jobbing customers for open hearth sheets. Buying of small lots from store has also been active. Based on the price of 3.20c., Pittsburgh, for No. 28 galvanized, in carload lots to jobbers, the differentials ruling in the Chicago market are as follows: No. 30, 3.68c.; No. 29, 3.48c.; No. 28, 3.38c.; No. 27, 3.23c.; Nos. 25 and 26, 3.08c.; Nos. 23 and 24, 2.88c.; Nos. 18 to 22, 2.78c.; Nos. 15 to 17, 2.63c.; Nos. 12 to 14, 2.48c.; Nos. 10 and 11, 2.38c. The differentials on black sheets remain unchanged. No. 10 blue annealed sheets are quoted at 1.83c., Chicago, and No. 28 black, 2.38c. Prices from store, Chicago, are: No. 10, 2.[illegible]c.

THE IRON AND METAL MARKETS

to 2.20c.; No. 12, 2.15c. to 2.25c.; No. 28 black, 2.75c. to 2.85c.; No. 28 galvanized, 3.65c. to 3.75c.

Bars.—Specifications for soft steel bars have been heavier the past three or four days than at any time in the preceding three or four months, as the weakness in prices which checked specifications for a month preceding the election has disappeared. The principal buyers of bars on yearly contracts did not want to see the price go off, and enough new business has appeared in the last week to satisfy the mills that had been disposed to make concessions. The bar iron mills are doing better. The railroads are not reported as placing any large contracts, but they are specifying more frequently for 100 and 200 ton lots. Manufacturers of specialties in the equipment trade are figuring with the railroads on good contracts, and this helps the market. The hard steel bar mills are getting more business this week than for some time past. We quote as follows: Soft steel bars, 1.58c.; bar iron, 1.35c. to 1.40c.; hard steel bars rolled from old rails, 1.45c. to 1.50c., all Chicago. From store, soft steel bars, 1.80c. to 1.90c.

Rods and Wire.—Manufacturing consumers of wire are becoming interested in placing contracts for their requirements for the first half of 1911 and some of them are anxious to close. The mill interests, however, do not expect to make prices covering the first half until December 1 on this class of trade. The jobbing demand for wire products has kept up at a very good rate, but is expected to fall off now that freezing weather is in sight. This is especially true of barb wire and field fence. In the case of nails it is estimated that about half the product of the mills is used for packing boxes and this trade is not much affected by the seasons. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.68c.; wire nails, 1.88c.; painted barb wire, 1.88c.; galvanized, 2.18c., all Chicago.

Old Material.—There is a little more strength in the scrap market, but not enough to create any notable movement in prices. The open hearth steel interests are taking all the melting steel that is offered them, paying on a basis of $12.75 for strictly graded heavy melting steel. There is not much demand for the higher grades of steel scrap. The steel foundries are not getting the orders from automobile manufacturers that they had a year ago, and their melt has been considerably reduced. The larger steel foundry interests which handle railroad work have accumulated large stocks of scrap during the past summer, and will not be in the market until they have booked a considerable amount of new business for their product. The malleable foundries are apparently getting some of this railroad business, as there is a better demand for railroad malleable scrap and prices are a little stronger. The demand from gray iron foundries is holding the market for cast scrap about even. The rolling mills are carrying large stocks, and apparently are getting all the material they need at present prices. The demand for hard steel bars rolled from old rails has been light for some time, and this has made the market easy for rerolling rails. The prices quoted below are for delivery to buyers' works, all freight and switching charges paid. Sellers of scrap usually receive 50c. to $1 less in this district, owing to high switching charges. Following prices are per gross ton, delivered, Chicago:

Old iron rails	$16.00 to $16.50
Old steel rails, rerolling	15.00 to 15.50
Old steel rails, less than 3 ft	13.50 to 14.00
Relaying rails, standard sections, subject to inspection	24.00 to 25.00
Old car wheels	13.50 to 14.00
Heavy melting steel scrap	12.25 to 12.75
Frogs, switches and guards, cut apart	12.25 to 12.75
Shoveling steel	11.75 to 12.25

The following quotations are per net ton:

Iron angles and splice bars	$14.00 to $14.50
Iron car axles	19.00 to 19.50
Steel car axles	19.00 to 19.50
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.00 to 11.50
Springs, knuckles and couplers	11.50 to 12.00
Locomotive tires, smooth	17.00 to 17.50
No. 1 dealers' forge	10.50 to 11.00
Steel axle turnings	8.25 to 8.75
Machine shop turnings	7.25 to 7.75
Cast and mixed borings	4.75 to 5.25
No. 1 busheling	10.00 to 10.50
No. 2 busheling	8.00 to 8.50
No. 1 boilers, cut to sheets and rings	8.50 to 9.00
Boiler punchings	14.00 to 14.50
No. 1 cast scrap	12.50 to 13.00
Stove plate and light cast scrap	10.75 to 11.25
Railroad malleable	11.50 to 12.00
Agricultural malleable	10.50 to 11.00
Pipes and flues	9.00 to 9.50

Merchant Steel.—Specifications for mill shipments have shown a steady improvement since September 1, and the volume of business is normal. There is a good demand from store for tool steel and special lines of material. A railroad equipment company has purchased a round lot of material from store in order to obtain immediate delivery, and the general inquiry for store lots of all grades of steel is active.

Cast Iron Pipe.—The leading pipe interest has taken a letting of 500 tons of 16-in. water pipe at Chanute, Kan., for winter shipment. Inquiries are beginning to come in from Western cities for winter shipment. In fact, the season is opening earlier than in former years, and if municipalities could obtain the money at satisfactory rates there would be a very heavy buying movement for water pipe. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for gas pipe.

Philadelphia

PHILADELPHIA, PA., November 15, 1910.

Generally speaking, consumers are still disposed to make haste slowly, and, although there has been some feeling around for supplies for delivery during the early part of next year, no further definite inquiry of any importance is reported. Several of the large blocks of foundry iron before the trade recently have been closed, but no further heavy tonnages have come out. Further curtailment of pig iron production is in sight, and it is quite likely that several Eastern and several Virginia furnaces will go out before the end of the month. A little more interest has developed in the steel making grades of pig iron and some sales of basic iron have been made. Heavy steel plates remain quiet, but a better movement in structural material is to be noted. The billet situation shows but little change. A better demand for sheets, however, is reported. The railroads still hold off, and no important orders for rails or cars have been placed in this district. Iron bars continue weak, while the old material market is at a standstill.

Iron Ore.—Importations at this port during the month of October aggregated 87,380 tons, at an invoiced value of $299,218. During the week ending November 12 arrivals totaled 48,298 tons, at an invoiced value of $168,393. There is no fresh movement in the ore market in this district.

Pig Iron.—Several of the larger blocks of foundry iron, referred to recently, have been closed during the week. The Baldwin Locomotive Works has purchased 2000 tons of high silicon and 1000 tons of low silicon, special analysis iron, for first quarter delivery, which was taken at prices a trifle under the current market for standard grades. A nearby cast iron pipe foundry purchased 1000 tons of low grade iron, and it is reported that another pipe maker closed for a block of several thousand tons. A thousand tons, half No. 2 X and half No. 2 plain, was taken for early delivery by a machinery builder, but the inquiry for 1000 to 2000 tons from a stove founder has been withdrawn. No further inquiry for large quantities for early 1911 delivery has come out, although there has been a fair amount of small inquiry. With the exception of the sales above referred to transactions in foundry grades have been less pronounced, the bulk of the business being in small lots at prices ranging from $15.75 to $16, delivered, for No. 2 X foundry. Producers are still disinclined to fill up order books for early 1911 shipment at ruling prices, the disposition to blow out furnaces is still strongly in evidence, and the number now active in this territory will no doubt be still further reduced before the end of the month. The situation in Virginia iron has developed some weakness. A number of sellers still adhere to $13.25, furnace, for No. 2 X, and refuse to sell for extended forward delivery, the same grade, however, can be had from other producers at $13, furnace, either for prompt or first quarter delivery, although it is stated that the tonnage that will be sold at this figure is limited. It is reported that even the lower quotation has been shaded, but that the iron offered is hardly to be considered up to the usual standard grade. A better volume of business has been done in forge iron, and several fair inquiries, one for 1000 tons, are being figured on. Sales have been made to rolling mills at $14, furnace, making a range of delivered prices from $14.25 to $14.60, according to the delivery point. More interest is shown in the steel making grades; a belated announcement is made of a sale of 10,000 to 12,000 tons of basic iron to an Eastern structural steel maker, for November, December and January delivery, at $14.75, delivered, which was closed several weeks ago. Another buyer is still in the market for a round lot of basic for first quarter, while a sale of several thousand tons of basic at $14.75, delivered, and a like amount of Bessemer iron has been made to another consumer, delivery during the next three months. A better inquiry for low phosphorus iron is also reported, one buyer is in the market for 3000 tons, while other consumers are feeling around for early 1911 supplies. Small sales of this grade have been made at $22.50, delivered in this vicinity. The following range of prices represents the market for standard brands, delivered

THE IRON AND METAL MARKETS

in buyers' yards in this vicinity, shipment ranging from prompt to first quarter of next year:

Eastern Pennsylvania, No. 2 X foundry	$15.75 to $16.00
Eastern Pennsylvania, No. 2 plain	15.25 to 15.50
Virginia, No. 2 X foundry	15.80 to 16.25
Virginia, No. 2 plain	15.80 to 16.25
Gray forge	14.25 to 14.75
Basic	14.75 to 15.00
Standard low phosphorus	22.50

Ferromanganese.—Sales have been small, and, while there has been a little more inquiry, the market drags. For deliveries running over the first half of next year, $38.75, Baltimore, is named, while some sellers name $39, Baltimore, for delivery over the entire year.

Billets.—Orders during the week, while not numerous, have in a number of cases been of larger size. While there has been little in the way of definite inquiries for forward requirements, consumers are showing some interest in the market, but sellers are not disposed to sell for forward delivery at present quotations. Basic open hearth rolling billets for delivery in this territory during the remainder of the year can be had at $25.50 to $26, according to tonnage, but no quotation is available as yet for first quarter shipment. Forging billets are firm at $28, Eastern mill, the usual extras being added for high carbons and special sizes.

Plates.—The demand continues irregular and mills report the aggregate tonnage of orders during the past week as being smaller. While there are a few fair sized propositions under negotiation, they close slowly. Consumers would, in instances, contract for forward requirements, but, as a rule, mills refuse orders on which the delivery is extended. Meanwhile prices for heavy plates in carload lots are well maintained at 1.55c., delivered in this vicinity.

Structural Material.—More activity in the way of building work is to be noted, several contracts have recently been placed, including one for 1500 tons for a hotel addition in Washington, D. C. The contract for the Union League addition, about 900 tons, is still unplaced, but expected to be closed this week. Fabricators are figuring on an eight-story building, requiring about 900 tons, to be erected in this city, and a building for which 1100 tons will be required, in Savannah, Ga. Several other smaller propositions in this vicinity are also pending. There has been a fair demand for business of a miscellaneous character, and prices of plain shapes, delivered in this district, have been comparatively firm at 1.55c. to 1.60c., according to specifications.

Sheets.—Business has again taken an upward turn, and orders are more numerous as well as somewhat larger in size. There is also a better inquiry for forward delivery, but Eastern mills will not consider business for 1911 shipment at present prices. Mills are more actively engaged and prices are firm, the following range being named by Eastern makers for prompt shipment: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—Business in refined iron bars has been offered a trifle more freely, but the quantities involved have been small, carload lots being the maximum. Makers are after orders sharply, and while 1.37c. to 1.42c., delivered in this territory, about represents the market for refined iron bars, concessions could no doubt be had for desirable business. The demand for steel bars continues fairly even, with prices at 1.55c., delivered.

Coke.—The market has been quieter. Negotiations for furnace coke for next year's delivery are under way, but develop slowly, owing to uncertainty of blast furnace operations. Foundry coke has been sold in moderate lots. Prices are practically unchanged, spot furnace coke may be had at $1.55 per net ton at ovens, while $1.75 to $1.85, ovens, is quoted for extended delivery. Spot foundry coke is quoted at $2 to $2.10, ovens, but for forward delivery prices range from $2.20 to $2.40, ovens. The following range of prices per net ton about represents the market for delivery in buyers' yards in this vicinity:

Connellsville furnace coke	$3.85 to $4.10
Foundry coke	4.40 to 4.75
Mountain furnace coke	3.45 to 3.70
Foundry coke	4.00 to 4.35

Old Material.—The demand continues very light and sales have been largely confined to transactions between brokers for material to apply on old contracts. Consumers show little interest in the market and purchases are confined to odd bargain lots. No. 1 heavy melting steel is quiet, at $13.50 to $13.75, delivered, and, while lower prices are talked about, it is to be noted that bids of $13.50 to $13.00 on recent railroad lists failed to result in bidders getting any tonnage. Rolling mill grades are dull and the market, on the whole, listless. The following range about represents sellers' ideas of the market, delivered in buyers' yards, eastern Pennsylvania and nearby points, carrying a freight rate from Philadelphia ranging from 45c. to 1.85c. per gross ton, although buyers would probably not purchase at those figures, unless in need of material:

No. 1 steel scrap and crops	$13.50 to $13.75
Old steel rails, rerolling	15.50 to 16.00
Low phosphorus	19.00 to 19.25*
Old steel axles	20.00 to 20.50*
Old iron axles	26.50 to 27.50*
Old iron rails	18.00 to 18.50*
Old car wheels	13.50 to 14.00
No. 1 railroad wrought	16.00 to 16.50
Wrought iron pipe	12.75 to 13.25
No. 1 forge fire	11.50 to 12.00
No. 2 light iron	7.50 to 8.00
Wrought turnings	8.50 to 9.00
Cast borings	8.50 to 9.00
Machinery cast	14.00 to 14.50
Railroad malleable	13.50 to 14.00
Grate bars	11.50 to 12.00
Stove plate	10.00 to 10.50

* Nominal.

The Philadelphia office of the Bethlehem Steel Company, W. B. Kennedy, sales agent, and the office of the Juragua Iron Company, now located in the Pennsylvania Building, will remove on December 1 to Suite 1609 in the Morris Building, Chestnut street, above Broad street.

Cleveland

CLEVELAND, OHIO, November 15, 1910.

Iron Ore.—The ore shipping season is rapidly drawing to a close. Boats of the Pittsburgh Steamship Company that are bound down with cargoes will go into winter quarters as soon as they are unloaded, and no boats of that fleet will sail after this week. Bad weather has interfered with the ore movement during the past few days, and some boats that were to get another cargo have been ordered into winter quarters. Some of the ore firms will wind up their shipments this week and others will keep a few boats running during the remainder of the month. We quote prices as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—The market continues fairly active. A number of sales of foundry grades were made during the week and a fair volume of new inquiries came out for the first quarter and first half delivery. Local and Valley prices remain stationary, but one local interest, that is largely protected from this competition because of freight rates, and which recently advanced its asking price 25c. a ton, reports that it has made some sales at a slight advance. The Elyria, Ohio, furnace manufacturer, who had an inquiry out last week for 2000 to 3000 tons of No. 2 foundry for the first half, has bought the bulk of its requirements from a Cleveland furnace. A central Ohio culvert manufacturer has bought 1000 tons of No. 2 foundry for the same delivery. One local interest reports sales during the week aggregating about 7000 tons, mostly in small lots, of foundry iron. A central Ohio manufacturer has an inquiry out for 1000 tons of No. 2 Northern and 500 tons of Southern for the first half, and a number of smaller inquiries are pending. Other buyers are feeling the market without having definite inquiries out. Sales are being made on the basis of $14, Cleveland or Valley furnace, for No. 2, for the first half, and $14.25, delivered Cleveland, for the same delivery. Some interests still decline to meet the market and have practically no tonnage on their books for delivery after the first of the year. There is a fair demand for Ohio silvery iron in small lots. Prices range from $18 for the first quarter to $18.25 to $18.50 for the first half. We note the sale of 1000 tons of charcoal iron for the first half. Southern iron appears firm, at $11.50, Birmingham. Several producers have declined to accept offers of $11.25. For prompt shipment and the remainder of the year we quote, delivered, Cleveland, as follows:

Bessemer	$15.50 to $15.65
Northern foundry, No. 1	14.50 to 14.75
Northern foundry, No. 2	14.25
Northern foundry, No. 3	14.00
Gray forge	14.00 to 14.15
Southern foundry, No. 2	15.35
Jackson Co. silvery, 8 per cent. silicon	19.05 to 19.25

Coke.—The market is very quiet and prices are weak. There appears to be a surplus of foundry grades for prompt shipment at present. There is some inquiry for furnace coke for the first half, but consumers are showing a disposition to want to make contracts on a sliding scale basis. The demand for foundry grades is mostly in car lots. We quote standard Connellsville furnace coke at $1.50 to $1.55 per net ton, at oven, for spot shipment, and $1.80 to $1.90 for the first half. Connellsville 72-hour foundry coke is held at $2 to $2.20 for spot shipment, and $2.25 to $2.50 on contracts through the first half.

Finished Iron and Steel.—The demand in finished lines continues moderate, although there are indications of an improvement. Some inquiries for round tonnages in bar

THE IRON AND METAL MARKETS

products have come out during the week. Mill agencies are getting a good volume of orders, but they are mostly for small lots. The demand for steel bars on contracts is fairly active, and orders for concrete reinforcing bars are still quite plentiful. Plates continue quiet, but orders for small lots of structural material are holding up well. Prices on steel bars and structural material are firm at 1.40c., Pittsburgh. Plates are being shaded to 1.35c., only by mills making the narrower sizes. The demand for sheets is less active with the approach of the winter season that will interfere with outside work. Sheet prices are being quite generally shaded $1 a ton. In structural lines a good amount of new work is developing in this city, much of which is expected to come out early next year, making the structural outlook very promising. Among new work is an addition to the Pingree shoe factory in Detroit, requiring 800 tons, for which bids are now being received. The contract for 800 tons for the Fowler Building in Detroit has finally been awarded to the American Bridge Company. At the recent election the voters of Cuyahoga County authorized the County Commissioners to issue bonds for building a new high level bridge in Cleveland. Work will be started as soon as possible, probably during the coming summer, and will require a large tonnage of steel. The Standard Oil Company has awarded a contract to the American Shipbuilding Company for a steamer and a barge to be operated in the oil trade on the Great Lakes. It is expected that the Jones & Laughlin Steel Company will order a new ore boat to replace the W. C. Moreland, a 600-ft. boat that was recently lost on Lake Superior after being in commission but a few weeks. The demand for shafting has improved considerably as a result of increased activity in the automobile trade. The demand for bar iron is a little more active, owing to the receipt of orders from the Northwest to be shipped by water before the close of navigation. Prices are unchanged at from 1.30c. to 1.35c., Cleveland.

Old Material.—While the market continues to drag along the feeling among dealers is decidedly better. They believe that the bottom has been reached and that somewhat better prices will prevail before long. With this expectation they are refusing to sell out of stock at current prices. Consumers apparently do not share in the belief that prices will advance soon, and are buying only for their immediate requirements in small lots. The demand for borings and turnings is somewhat more active. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$14.00 to $14.50
Old iron rails	16.00 to 16.50
Steel car axles	20.00 to 20.50
Heavy melting steel	13.00 to 13.25
Old car wheels	13.75 to 14.25
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	12.00 to 12.50
Railroad malleable	13.00 to 13.50
Light bundled sheet scrap	9.00 to 9.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.00 to $21.50
Cast borings	5.50 to 6.00
Iron and steel turnings and drillings	6.25 to 6.50
Steel axle turnings	8.75 to 9.00
No. 1 busheling	11.00 to 11.50
No. 1 railroad wrought	13.00 to 13.50
No. 1 cast	11.50 to 12.00
Stove plate	10.50 to 11.00
Bundled tin scrap	11.00 to 11.50

Cincinnati

CINCINNATI, OHIO, November 16, 1910.—(*By Telegraph.*)

Pig Iron.—Actual buying during the past few days has not been so heavy as was anticipated. However, inquiries are coming in and prospective business is very encouraging. From the St. Louis territory local agencies are working on an inquiry for 2000 tons of foundry iron and 5000 tons of basic. An Illinois consumer is asking for 1500 tons of Southern foundry, and a nearby Ohio firm wants 900 tons of either Northern or Southern foundry all for first half shipment. The usual number of requests for small tonnages of foundry and some malleable are being figured on. A 600-ton lot of Southern foundry No. 2 was sold this week at $11 for prompt delivery, and a local foundry is also understood to have covered for its requirements at this same figure, with shipments running through December. But generally speaking, there is a firmer feeling on prices for Southern foundry, and while there are reports that all the furnaces have not fallen into line, it is a fact that most of them are holding out strong for $11.50 covering first half delivery. A number of $11 offers are reported, but local agencies state they are unable to place the business at this figure. Except for immediate shipment Northern foundry No. 2 is available at $14, Ironton, and contracts extending through the first half can be made at this figure, although some furnaces are holding out for $14.50. Malleable is firm at $14.25 to $14.50, and there is a fair inquiry for it, with some small business being done. The local order for a round lot of basic is being held up, and the Central Ohio firm that asked for 1000 tons of basic has also withdrawn its inquiry. For immediate delivery and for the remainder of the year, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry	$14.75 to $15.25
Southern coke, No. 2 foundry	14.25 to 14.75
Southern coke, No. 3 foundry	13.75 to 14.25
Southern coke, No. 4 foundry	13.50 to 14.00
Southern coke, No. 1 soft	14.75 to 15.25
Southern coke, No. 2 soft	14.25 to 14.75
Southern gray forge	13.50 to 14.00
Ohio silvery, 8 per cent. silicon	19.20
Lake Superior coke, No. 1	15.70 to 16.20
Lake Superior coke, No. 2	15.20 to 15.70
Lake Superior coke, No. 3	14.70 to 15.20
Standard Southern car wheel	25.25 to 25.75
Lake Superior car wheel	22.25 to 22.75

(*By Mail.*)

Coke.—Two Southern contracts for furnace coke were closed last week, but local agencies were not favored with any of the business, and details, as to the tonnage and price, are not available. It is stated that furnace coke is moving very slowly, especially in the Connelsville field, and some operations are understood to be very anxious for business. Only small quantities of foundry coke are being sold, and no large contracts are in sight just now. Furnace coke ranges from $1.50 to $1.60 per net ton, at oven, for spot shipment, and around $1.65 to $1.85 for contracts. Foundry coke can be purchased at $2 for immediate shipment, but $2.25 per net ton, at oven, represents the average contract figure at which business would be accepted. The prices govern in all three fields.

Finished Iron and Steel.—A little more activity is noted in the structural material line. Reinforcing concrete bars have been reasonably good sellers during the past few days. Other lines continue dull. Structural material is quoted at 1.90c., but iron bars are obtainable at 1.75c. per pound, warehouse.

Old Material.—Consumers appear loath to make any time contracts and continue purchasing only such amounts of scrap as will keep them operating. All the yards have large stocks on hand. Prices for delivery in buyers' yards, Cincinnati and southern Ohio, are as follows:

No. 1 railroad wrought, net ton	$12.50 to $13.00
Cast borings, net ton	4.50 to 5.00
Steel turnings, net ton	6.00 to 7.00
No. 1 cast scrap, net ton	11.50 to 12.50
Burnt scrap, net ton	8.00 to 9.00
Old iron axles, net ton	17.50 to 18.50
Old iron rails, gross ton	14.50 to 15.00
Relaying rails, 50 lb. and up, gross ton	22.50 to 23.50
Old car wheels, gross ton	12.00 to 13.00
Heavy melting steel scrap, gross ton	12.00 to 12.50

Birmingham

BIRMINGHAM, ALA., November 14, 1910.

Pig Iron.—The result of the recent election has had no appreciable effect on the Birmingham pig iron market. There have probably been more inquiries, but few, if any, of these have resulted in orders. Buyers still seem to be insisting that they should have their first quarter and first half iron on basis of $11, Birmingham. That price is still good for shipment during November and December, and it looks now like a question of endurance between the buyer and seller as to the price for the first half of 1911. The most careful check that is available on pig iron stocks in Alabama shows an increase of about 11,000 tons in October—practically all on the yards of two concerns. There has been no material change in the rate of production, and November finds the situation seemingly very similar to that of the past month. The producers of this district are simply moving along at a good rate of production, seemingly content to let the matter of price work itself out. Some good orders have been booked for charcoal pig iron, the price on which seems to be a little firmer. Some apprehension is felt in this district as to a great car shortage during the coming winter.

Cast Iron Pipe.—Selling agents do not report a larger volume of business transacted in the past week than for the week previous and prices are understood to have developed even more variations. It has been announced that the requirement of several large gas companies for extensions would come up for consideration within the next 30 days, but it is not probable that any such tonnage will be placed for shipment prior to January 1. A lot of 1500 tons of water pipe for Denison, Texas, will be placed in the coming week. With this exception actual business in sight is very unattractive. We continue to quote nominally as follows, per net ton, f.o.b. cars here, notwithstanding the fact that a criterion of values is not offered in any transactions recorded: 4 to 6 in., $21; 8 to 12 in., $20; over 12 in.,

THE IRON AND METAL MARKETS

average, $19, with $1 per ton extra for gas pipe. These prices are subject to material shading for municipal contracts.

Old Material.—Probably more interest is being manifested in this market than at the time of last report. One or more bargain lots on dealers' yards recently changed hands without establishing a basis for prices. The tonnage being offered dealers is very light and it is not believed that the aggregate of all grades on founders' yards in this district is very considerable. We quote nominal asking prices as follows, per gross ton, f.o.b. cars here:

Old iron axles	$15.00 to $15.50
Old iron rails	13.00 to 13.50
Old steel axles	14.50 to 15.00
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	9.00 to 9.50
No. 1 country	8.00 to 8.50
No. 2 country	7.50 to 8.00
No. 1 machinery	9.50 to 10.00
No. 1 steel	11.50 to 12.00
Tram car wheels	9.50 to 10.00
Standard car wheels	10.50 to 11.00
Light cast and stove plate	8.00 to 8.50

San Francisco

SAN FRANCISCO, November 9, 1910.

Business was retarded more than usual pending the election, and now it is over buyers are expected to take a little more interest, though no general movement is anticipated. The distributive movement on the whole is extremely quiet, but stocks in some lines are beginning to break up, and jobbers are entering the market in a small way. Prices on some lines of finished material from stock have been slightly reduced.

A change in terms of sale has been announced by local merchants, taking effect November 1. A discount of 2½ per cent. was formerly allowed for payment on the 10th of the month following date of sale, but hereafter terms will be 30 days net cash on bars and all heavy hardware. An effort was made to apply these terms to merchant pipe, but this will probably not succeed, owing to conditions obtaining in the plumbing supply trade.

Bars.—Several of the local merchants are carrying large stocks of foreign material. Reinforcing bars are moving in a moderate way in small lots, and foreign material for this purpose is offered in large quantities at low prices. The Western Steel Corporation, Irondale, Wash., has had a representative in this market, and has taken a number of small orders for bars at somewhat below importers' quotations, which are 1.76c. to 1.78c., San Francisco. It is announced that this company's mill will soon be in shape to supply all coast requirements of bars in all sizes. It will also in a few months be in position to roll structural shapes and plates. A further reduction in prices has been made by local merchants, bars from store, San Francisco, being quoted at 2.20c. for iron and 2.40c. for steel.

Structural Material.—Last month for the first time San Francisco took third rank among the Coast cities in building operations, being surpassed by both Los Angeles and Seattle. The valuation of permits granted here was $1,425,116, compared with $1,693,173 for September, this year, and $1,969,008 for October, 1909. It is conceded that the winter will be very dull. Few jobs of any magnitude have been awarded anywhere on the Coast. Locally, the Masonic Temple and the Knights of Columbus building should be heard from in a few days, and the Cortez Hotel is still withheld. The Nevada Building, one of the largest in prospect, and the temporary City Hall, will be of reinforced concrete. Bids on the Lowell High School will be received December 7, and figures are being taken on the Grattan School, with a number of other schools in sight. Plans are being drawn for the Terminal Hotel, to cost about $200,000. A new steel frame high school is planned for Portland, Ore., and an injunction against the erection of the proposed steel bridge by that city has been refused. The Pacific Gas & Electric Company will erect a small steel building at Colusa, Cal. Plans will be ready in about 10 days for an addition to the Court House at Portland, Ore., requiring about 1000 tons. Contracts are expected before long on steel caissons for the Government drydocks at Bremerton, Wash., and Honolulu, T. H. Local interests have not yet reduced their quotations on plain material from store, but very little business can be done at the nominal basis of 2.60c. for beams and channels, 3 to 15 in.

Rails.—A Western mill is said to have taken an additional contract for 21,000 tons of standard sections for the Salt Lake road, and an order has been placed for 70-lb. rails and supplies for a new line between Fresno and Clovis, Cal. It is reported that the long delayed Fresno-Hanford interurban line has obtained the necessary financial backing and will proceed at once with construction. A number of smaller inquiries are coming into the market, mainly from roads near the Coast, and the total movement is considered highly satisfactory for this time of year. Light rails are very quiet.

Merchant Pipe.—The demand in the oil fields has been of little consequence for several months, and ordinary sizes of merchant pipe are still dull. Some houses at interior points, particularly Sacramento, which has the same terminal rates from the East as San Francisco, are getting a fair volume of business, but local buying is closely limited. The stocks of many jobbers, however, have become broken, and mill interests are selling a slightly larger tonnage than last month. No general movement is likely for some months, as several local firms are still carrying heavy stocks. The Santa Fe Oil Company is planning to lay a pipe line from its wells at Olinda to San Bernardino, Cal., a distance of 40 miles.

Cast Iron Pipe.—A number of new inquiries are coming up, though most of them are of only moderate size. Los Angeles is in the market for a small lot of high pressure pipe, bids to be opened November 21, and the Los Angeles Gas & Electric Company will take bids this week for about 1200 tons. The Portland Gas & Coke Company, Portland, Ore., is in the market for several thousand tons. The Pomona Consolidated Water Company recently purchased 200 tons of 8-in. pipe. The Bay Cities Water Company of Oakland will probably purchase some small lots of 6 and 8 in. pipe. There is a tendency to easiness in prices.

Pig Iron.—The volume of work has increased at some of the local foundries, but the situation in general is unchanged, and the only movement of pig iron consists of occasional small lots for immediate delivery. Aside from some special analysis irons nothing can be sold above $23, and as a rule about $22 is the best that can be obtained.

Old Material.—A lot of 1000 tons of steel scrap, largely old boilers, was sold recently at the Mare Island Navy Yard. Otherwise there have been no important transactions in this line, local yards being pretty well cleaned up. Owing to the large requirements of the Western Steel Corporation, and the prospective opening of the Columbia Steel Company's new plant and that of the Pacific Coast Steel Company, it is believed that the coast demand will clean up all the melting scrap that can be obtained, and dealers are accordingly holding all supplies very firmly. Cast scrap is in slightly better demand, but by no means active, and supplies are light. Prices show little change, being quoted as follows: Cast iron scrap, net ton, $18; steel melting scrap, gross ton, $12.50; wrought scrap, net ton, $13.50; rerolling rails, net ton, $15. The San Francisco Iron & Metal Company now maintains an office at Seattle, Wash., and will shortly open a yard there.

St. Louis

ST. LOUIS, November 14, 1910.

The record breaking corn crop, by furnishing more business to railroads, is leading to an increase in the purchase of new and the repair of old equipment. In pig iron inquiry is more general, now that elections are over. Reports of prices being reduced further by Southern makers have been found to apply to furnaces having a lower freight rate than that from Birmingham, and to cases where the grade is not up to standard. Transactions of this nature have proved quite a disturbing factor.

Coke.—With the exception of one office, sellers report the past week a quiet one in coke, with business mainly for quick delivery; but specifications on contract coke are coming in quite freely. A leading house reports a sale of 6000 tons of foundry coke to a local company for next year's shipment. The local railroads have been buying smithing coke. There is some irregularity in prices. The quotations below are for round lots of standard Connellsville 72-hour foundry: Spot delivery, $2 to $2.25; for shipment to July, 1911, $2.25 to $2.50; 48-hour, $1.75 to $2, per net ton, f.o.b. oven. Carload lots are 25c. to 35c. per ton higher.

Pig Iron.—A marked improvement in the inquiry for pig iron is reported by the leading sellers. The following inquiries are mentioned: 500 tons Southern No. 2 foundry, shipment over the first half of 1911; 400 tons 80 per cent. ferromanganese; 100 tons Southern silvery, shipment prior to January 1; 1000 to 2000 tons malleable iron, shipment over first half; 800 to 1000 tons Southern No. 1 foundry for same shipment; 1200 tons Southern No. 2, same shipment; 300 tons Southern No. 2; 100 tons Northern foundry; 2500 tons (750 tons analysis basis, 500 tons No. 2 and 1250 tons No. 3) Southern foundry, for shipment over the first half of 1911; 250 tons No. 2 Northern foundry; 500 tons with silicon 2.25 to 2.75 per cent.; 300 to 500 tons Southern No. 1 foundry for immediate shipment. The following sales were made: 450 tons Lake Superior charcoal iron, shipment over the first quarter 1911; 100 tons Southern silvery, shipment prior to January 1; two lots of 600 tons each Southern analysis iron, shipment over first half 1911 (St. Louis

THE IRON AND METAL MARKETS

territory). Prices are somewhat firmer, and some furnaces are reported to have withdrawn from the market. There is, however, a disposition to furnish lots to suit buyers' ideas at the round lot figures. We quote Southern No. 2 foundry for any delivery up to July 1, 1911, at $11, though most Alabama furnaces are holding at $11.50 and some ask $12, with a variation of these figures for first quarter delivery, Birmingham basis.

Finished Iron and Steel.—The leading interest reports a marked improvement in the tone of the market, with more general inquiry for all kinds of steel products. The call for light rails is good, coming from coal interests mainly, with some call from lumber companies. There is more inquiry for structural material, and quite a good general demand for bars from both jobbers and manufacturers. In track material there is more activity, and a fair demand for steel hoops.

Old Material.—Leading dealers find indications of buying on a more liberal scale by consumers, but the present demand is quite moderate. The only railroad lot on the market the past week was 200 tons, offered by the Cotton Belt Railroad. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails	$14.00 to $14.50
Old steel rails, rerolling	13.00 to 13.50
Old steel rails, less than 3 ft	12.25 to 12.75
Relaying rails, standard sections, subject to inspection	24.00 to 24.50
Old car wheels	13.50 to 14.00
Heavy melting steel scrap	12.00 to 12.50
Frogs, switches and guards, cut apart	12.00 to 12.50

The following quotations are per net ton:

Iron fish plates	$11.50 to $12.00
Iron car axles	18.50 to 19.00
Steel car axles	17.50 to 18.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.00 to 11.50
Railway Springs	10.00 to 10.50
Locomotive tires, smooth	16.50 to 17.00
No. 1 dealers' forge	9.00 to 9.50
Mixed borings	4.50 to 5.00
No. 1 bushelling	11.00 to 11.50
No. 1 boilers, cut to sheets and rings	9.00 to 9.50
No. 1 cast scrap	11.50 to 12.00
Stove plate and light cast scrap	9.50 to 10.00
Railroad malleable	9.00 to 9.50
Agricultural malleable	8.50 to 9.00
Pipes and flues	9.00 to 9.50
Railroad tank and sheet scrap	9.00 to 9.50
Railroad grate bars	8.50 to 9.00
Machine shop turnings	7.50 to 8.00

The St. Louis Blast Furnace Company is proceeding with the relining of its furnace and expects to complete the brickwork in about two weeks. It has accumulated ore during the period of repairs and expects to blow in under favorable circumstances, as there are orders on its books for about four months' run.

The German Iron Market Less Active

BERLIN, November 4, 1910.

The iron market situation is surrounded by considerable uncertainty, and is apparently less satisfactory than a fortnight ago. The leading newspaper of Essen has issued this week its usual monthly review pitched in a rather pessimistic tone, and it has made a rather bad impression on the stock market. It warns the stock market operators that they have pushed up share prices considerably higher than is warranted by the actual state of the iron trade. It further says that specifications on goods already ordered are coming in less satisfactorily—even less so, in fact, than new business, which has not come up to expectations this autumn. The orders on hand with many important concerns, says this report further, are less than last year; and it mentions the case of the great Phœnix Company, whose orders at the beginning of October were 65,000 tons less than on that date in 1909.

Prices Show Irregularity

It is represented that dealers and consumers have little confidence in the stability of the market, and are, therefore, very cautious about doing new business. They doubt whether present prices can be maintained, particularly where they are fixed by mere price agreements rather than by syndicates like the Steel Works Union. The price situation is, in fact, involved in uncertainty. At the last trading in iron products on the Düesseldorf Exchange two weeks ago, the only changes were in boiler plates and light plates. The former were quoted at 130 to 134 marks, against 132 on the previous trading day; the latter, at 137.50 to 142.50 marks, against 125 to 140 marks. No changes in pig iron were noted. A controversy regarding the price of bars has been going on in the press for several days. The latest advance adopted by the convention was to about 114 marks, but it was asserted several days ago that one important concern in Hanover was selling at 100 marks, and that otherwise sharp price cutting was going on. In answer to this, however, it has been stated that the Hanover concern was selling at the low price, by a special arrangement with the convention, only for rail shipments in the direction of Berlin, as a compensation for the high freight charges on the long haul.

The Export Situation Not Satisfactory

In the export trade the price situation appears to be again less satisfactory. Belgian mills have continued to lower their offers at Antwerp. Last week it was asserted that they had reduced both iron and soft steel bars, on board ship, to 95 to 98 shillings, but according to German market reviews foreign buyers have no difficulty in placing orders at Antwerp for 94 to 95 shillings. These prices shut out German mills. Belgian works are also bidding very sharply for foreign business in heavy plates, cutting prices to 106 shillings, free on board—also a price that the Germans will not meet. German mills have taken some foreign orders in thinner plates without having to make any considerable price concessions. The export business in beams is very quiet, and goods are being offered at prices lower than those of the trade combination. The general export market is represented as depressed by the American situation, especially by the sales of American semimanufactured steel in England for 1911 delivery, which give the impression that American producers are not looking for an early improvement in their position. This week's review of the American market situation by *The Iron Age* made an unsatisfactory impression on yesterday's stock market here, since it failed to confirm the slight improvement claimed by other authorities.

The East Indian market appears to be fully supplied for the rest of the year; orders coming in from that quarter are only for 1911 delivery and at prices lower than the quoted lists; but it is stated that considerable business was done upon that basis. The Japanese market, which had shown a considerably improved demand some weeks ago, seems now to have fully supplied its demand. Trade with that country has been further cut down by a freight war among the shipping companies, which leaves rates for 1911 delivery in complete uncertainty.

The Home Market Quiet

The home market is very quiet in all its departments, and the outlook is evidently less satisfactory than at any time during the autumn. In the western part of the empire a number of local organizations of dealers are about to be dissolved owing to disagreements over prices. The fight between the Steel Works Union and the independent open hearth works continues. Last week it was stated in the press that the union had demanded of the organization of the manufacturers of fine sheets that they obligate themselves to buy all their material of the union, as otherwise the existing drawback on exported goods would be canceled. From the ore trade it is reported that business continues satisfactory; the market is still firm, and the furnaces are paying the higher prices recently adopted, without making any particular objections.

Buffalo

BUFFALO, N. Y., November 15, 1910.

Pig Iron.—The market has a firmer tendency and the majority of the furnaces have advanced prices sharply on all grades of pig iron. The advance approximates 50c. per ton, and in addition to this some furnaces have made a differential for the higher silicons, a course which has been ignored during the past few months. Orders for between 35,000 and 40,000 tons have been taken by Buffalo furnaces during the week for foundry grades and malleable with some basic. Some of this tonnage went at a slight advance over the low prices which have obtained recently. The United States Radiator Corporation placed a portion of its requirements contracted for last week with Buffalo furnaces, the remainder going to Ohio and Valley furnaces. A large manufacturer of railroad castings in western New York has an inquiry in the market for 5000 to 10,000 tons of basic. The Tonawanda Iron & Steel Company will blow out its "A" Furnace for relining the latter part of this week, and the New York State Steel Company's furnace, which is now out for relining, will be blown in again about the middle of December. We quote as follows, f.o.b. Buffalo, for deliveries covering remainder of year and first quarter of 1911:

No. 1 X foundry	$15.00 to $15.50
No. 2 X foundry	14.50 to 15.00
No. 2 plain	14.50 to 14.75
No. 3 foundry	14.25 to 14.50
Gray forge	14.00 to 14.50
Malleable	14.75 to 15.25
Basic	14.50 to 15.00
Charcoal	17.50 to 18.25

Finished Iron and Steel.—Although a fair volume of orders for bar and plate material and other finished products is coming in, the market appears to be dragging a little and

THE IRON AND METAL MARKETS

a number of inquiries for good sized tonnages that were pending prior to election are still held up by the prospective buyers, evidently because the purchasers wish to ascertain in just what way general business conditions will be affected by the result before deciding to buy. Prices remain firm. Steel bars, $1.40, Pittsburgh base, and $1.50, Pittsburgh, for hoops in carload lots or over; $1.55 to $1.60 for smaller and miscellaneous lots. It is understood that the Merchants Despatch Company's shops at Despatch, N. Y., have been awarded contract for 1000 fast freight line cars by the New York Central Railroad Company, mostly refrigerator cars, for which a considerable tonnage of plates and bars will be required. A local corrugated bar company has received contract for 275 tons of concrete reinforcing bars for lock and bridge abutment work on the Erie Canal between Fairport and Kings Bend. The Canadian export trade continues in exceptionally good volume. One inquiry from a large Canadian consumer calls for 100,000 boxes (about 5000 tons) of tin plate for delivery during 1911. Fabricated structural material is running rather lighter, but several small contracts are being figured this week. Metz Bros., who have been awarded contract for the German Deaconess Hospital, are receiving bids for the steel work, about 100 tons. The Lackawanna Bridge Company has received contract for the bridge work for Erie Barge Canal, section No. 63, between Fairport and Kings Bend, aggregating quite a large tonnage.

Old Material.—Transactions for the current week have not been quite as heavy as for the week prior to election, the demand being lighter in most lines. Prices are practically the same as last week, with the exception of No. 1 wrought and cast scrap which are slightly firmer, due to increased demand from outside districts. We quote, as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$12.25 to $12.75
Low phosphorus steel	17.00 to 17.50
No. 1 railroad wrought	15.00 to 15.50
No. 1 railroad and machinery cast scrap	13.50 to 14.00
Old steel axles	18.50 to 19.00
Old iron axles	23.00 to 23.50
Old car wheels	14.00 to 14.50
Railroad malleable	13.00 to 13.25
Boiler plate	10.00 to 10.50
Locomotive grate bars	10.75 to 11.25
Pipe	10.50 to 11.00
Wrought iron and soft steel turnings	6.75 to 7.00
Clean cast borings	6.50 to 6.75
No. 1 busheling scrap	11.25 to 12.00

New York

NEW YORK, November 16, 1910.

Pig Iron.—A further moderate business has been done in foundry pig iron in the past week, New Jersey, eastern Pennsylvania and New England buyers being represented in the transactions. The low prices recently made by Buffalo furnaces appear to have been withdrawn, and the principal change noticeable throughout the market is that furnaces are not now accepting bids with the readiness that was apparent two weeks ago. The minimum for No. 2 X at Buffalo is now generally $14, whereas this price has been cut 25c. or more in some transactions in the early part of the month. Some of the sales made in New Jersey by eastern Pennsylvania furnaces indicate that low level was reached in those districts in the past 10 days, and views of producers are now somewhat firmer. The sales reported for the week include a heavy tonnage from Buffalo on contracts with radiator works, one interest having closed about 20,000 tons in the latter part of last week. In eastern Pennsylvania a sale of basic iron made two weeks ago at $14.75 is just reported. On deliveries in the first half of 1911 makers are asking $15 and in some cases higher. We quote as follows, for tidewater deliveries: Northern No. 2 foundry, $15.75 to $16; No. 2 X, $15.25 to $15.50; No. 2 plain, $15.25; Southern No. 1 foundry, $15.50 to $16; No. 2, $15.25 to $15.50.

Ferroalloys.—The market for ferromanganese is very firm here and offerings are being made at $39, seaboard, for delivery over the first half. There are some good inquiries out. The supplies of ferrosilicon for spot delivery are limited and sellers show very little disposition to take much business at the present figures. The market here is firm at $56.50, delivered at Pittsburgh.

Finished Iron and Steel.—Elections over, their influence, if anything at all, is removed for the time being at least, and their result can have little effect for some months to come. Aside from such considerations, the feeling is quite general that little improvement is to be expected before the first of the year, and there is an even more decided opinion that conditions cannot change for the worse. The railroads appear to be the important factor and probably if they were doing their usual buying, business would be normal for this season of the year, for the attitude and actions of the railroads have a very far-reaching effect on other industries. Some feel that when the buying movement sets in it will be very heavy, others that the railroads have adopted a more methodical buying policy and that it will mean ultimate good, for their orders have usually been either very plentiful or very scarce. When the former the mills increased their capacity, only to be in a bad way when the orders diminished. With a steadier demand it will be much easier to regulate producing capacity to correspond. The plate trade is very quiet, but awaits with interest the issue of specifications, which is expected within a week or 10 days, for the plates to be required for battleship No. 34 to be built in the Brooklyn Navy Yard. About 6000 to 7000 tons of standard plates will be required and about 1000 tons of special treatment steel plates. The ship will have a displacement of 25,000 tons. The steel bar trade is receiving good specifications, but taking little new business. The bar iron interests report a little improvement and better inquiry. Structural business continues about the same. The American Bridge Company has received from the Erie Railroad an order for eight small bridge spans, part for its Cincinnati division and part for other divisions, aggregating 400 tons, and from the Bessemer & Lake Erie, 350 tons of bridge material. It now appears that the Baltimore & Ohio work near Chicago will require but 800 to 900 tons, that for the Virginia Railway, 2000 tons, and since a revision of the design, the highway bridge for Seattle is expected to take 1200 tons. Awards have been made of several small bridges for the New York, New Haven & Hartford, aggregating 350 tons, of the transfer bridge for the New York Central at Sixty-ninth street, 350 tons, and of a paper mill, 300 tons, for the Piermont Paper Company at Piermont, N. Y. The Jones & Laughlin Steel Company has taken about 1200 tons for the Raleigh Hotel, to be erected at Washington. The Boston Elevated Railway is in the market for a tonnage which may reach 5000, for its Cambridge extension, but it may take considerably less or none at all, according to whether or not it is satisfied with the prices. Bids closed November 12 for 14 small bridges for the Lehigh Valley. No decision has been reached on the 1500 tons for the Realty Trust Company building at Atlanta, nor the 1200 tons for the Savannah Bank & Trust Company building at Savannah, Ga. The general contract for the latter has been taken by a Philadelphia contractor. The Riter-Conley Mfg. Company has 800 tons for a warehouse for the Oil Well Supply Company at Pittsburgh. The American Bridge Company has received an additional order from the American Rolling Mills Company for 700 tons, and it now looks as though this company would get the Fowler Estate building, Detroit, 750 tons. Bids closed November 14 on the general contract for the Bigelow Building, Boston, which will require 1000 tons. Prices remain unchanged: Plain structural material, plates and steel bars, 1.56c. to 1.61c., and bar iron, 1.45c. to 1.50c.

Steel Rails.—The Carnegie Steel Company will roll 15,000 tons of the 30,000 tons recently placed by the Norfolk & Western, and has closed 5700 tons for A De Mayo & Co. The Steel Corporation has booked 29,000 tons for the Louisville & Nashville, to be rolled at Ensley, Ala., and 8000 tons for the Kansas City, Mexico & Orient. The Interborough, New York, has given an order for 500 tons of contract rails.

Cast Iron Pipe.—Last week was even quieter than its predecessor in this line. The only important municipal contract was placed at a very low figure by the city of Yonkers, with John Fox & Co., for about 1200 tons of 6 and 8 in. pipe, at $20.70 per ton, delivered. A contract was also awarded by the Brooklyn Union Gas Company for 1380 tons of 4, 6, 8 and 12 in. pipe and special castings, but it was a private contract and the price is not given. Carload lots of 6 in. are quoted at $22 per net ton, tidewater.

Old Material.—No improvement in the scrap market is to be noted, and transactions have been insufficient to change any quotations. Melting steel scrap and wrought iron appear to have been in greatest demand. Dealers' quotations per gross ton, New York and vicinity, are as follows:

Rerolling rails	$12.50 to $13.00
Old girder and T rails for melting	11.00 to 11.50
Heavy melting steel scrap	11.00 to 11.50
Relaying rails	20.50 to 21.50
Standard hammered iron car axles	22.50 to 23.00
Old steel car axles	17.00 to 17.50
No. 1 railroad wrought	13.50 to 14.00
Wrought iron track scrap	12.50 to 13.00
No. 1 yard wrought, long	12.50 to 13.00
No. 1 yard wrought, short	11.50 to 12.00
Light iron	5.50 to 6.00
Cast borings	6.50 to 7.00
Wrought turnings	6.50 to 7.00
Wrought pipe	10.00 to 10.50
Old car wheels	12.00 to 12.50
No. 1 heavy cast, broken up	12.00 to 12.50
Stove plate	10.00 to 10.50
Locomotive grate bars	9.50 to 10.00
Malleable cast	12.50 to 13.00

THE IRON AND METAL MARKETS

Metal Market

NEW YORK, November 16, 1910.

THE WEEK'S PRICES

Cents Per Pound.

	Copper.			Lead.		Spelter.	
Nov.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
10	13.00	12.87½	36.05	4.40	4.30	5.95	5.80
11	13.00	12.87½	35.80	4.40	4.30	5.95	5.80
12	13.00	12.87½	....	4.40	4.30	5.95	5.80
14	13.00	12.87½	35.80	4.40	4.30	5.95	5.80
15	13.00	12.87½	36.40	4.40	4.30	5.95	5.80
16	13.00	12.87½	36.80	4.40	4.30	5.95	5.80

Pig tin is advancing in this market because of the close concentration of stocks. Copper, which sagged somewhat early in the week, is firmer on account of a rise in the London market. Spelter is moving very slowly, but prices are well maintained. Lead is stronger here as the result of advances in the Western market.

Copper.—The copper market has been listless all week and there has been very little trading. There was talk on Monday of offers to shade prices on electrolytic copper for immediate delivery. This was caused largely by reports of trading at lower prices in the London market. Yesterday, however, the price of copper advanced sharply in London, and this morning's cable showed stronger quotations, consequently the market here in electrolytic copper improved in tone and the metal is generally held at 12.87½c. Lake copper was much firmer than electrolytic all week, and the price of 13c., established November 7, was well maintained. The exports of copper so far this month have been slightly better than they were during the same period last month, amounting in all to 11,403 tons. The London market closed to-day with spot copper selling at £57 16s. 3d. and futures at £58 15s. The sales amounted to 350 tons of spot and 890 tons of futures. The market closed very dull.

Pig Tin.—Pig tin advanced 60 points yesterday as the result of a report from London that the price for futures there advanced to the same price as that asked for spot tin. This morning's cable confirmed this report by quoting both spot and future tin at £156 15s. This means that futures are being taken up by the London corner, and as stocks are closely concentrated here it is expected that the New York market will follow the London fluctuations very closely for a week at least. There has been so little trading that the market has had no snap despite the advanced prices, and even now the metal is bringing only 5 points above the cost of import. On Monday it was 55 points below the import cost. It is generally conceded that existing prices are artificial and both sellers and consumers state that considering the available supplies the metal is bringing much more than it should. The arrivals of tin in this country so far this month have been 2100 tons and there are 670 tons afloat. In New York this afternoon pig tin was sold for 36.80c. The London market closed with spot tin selling at £167 7s. 6d. and futures at the same price. The sales amounted to 170 tons of spot and 400 tons of futures. The market closed strong.

Tin Plates.—As is usually expected at this time of the year, the demand for tin plate is not active. Sellers are looking forward to a good call for stocks from the manufacturers of tinware household utensils, &c., as soon as the holiday season is over. As a rule the department store buyers, who are the principal customers of tinware manufacturers in this line, place a large part of their orders for goods directly after the first of the year. The price for 100-lb. coke plates remains at $3.84.

Lead.—Although there is a light demand for lead, the market is stronger than it was a week ago and the metal is being held here by outside sellers at 4.45c. The leading interest continues to quote 4.40c., which puts the general market at that price, although holders of selected brands are getting the higher figure. In the West lead is very firm at 4.30c.

Spelter.—The spelter market is attracting attention because of the unusual conditions. Regardless of the fact that there has been a very light demand and consumers are filling their wants by buying on a hand to mouth basis, the recent rise is being held to firmly by those who have the metal to sell. There is no way of finding out just what the actual production of spelter is at present, and buyers have to take the producers' word for it that the production has decreased, both because of a restriction and through the forced closing of plants in the Kansas gas district. Some sellers of spelter go so far as to predict the price will soon be advanced 6c. a pound, East St. Louis, which would make it 6.15c. here. At present the nominal prices are 5.95c., New York, and 5.80c., East St. Louis.

Antimony.—It is thought that the antimony market has reached the low level and buyers have been more active of late than in several weeks past. Prices have not advanced, but the market is firmer and there is less indication of shading. Cookson's is quoted at 8.15c. and Hallett's at 7.75c. Chinese brands are from 7.40c. to 7.55c., and Hungarian grades from 7.12½c up. There are reports of inquiries for large quantities of both Cookson's and Hallett's.

Old Metals.—The market is strong, but dealers' selling prices are unchanged, as follows:

	Cents.
Copper, heavy cut and crucible	12.50 to 12.75
Copper, heavy and wire	11.75 to 12.00
Copper, light and bottoms	11.00 to 11.25
Brass, heavy	8.25 to 8.50
Brass, light	7.00 to 7.25
Heavy machine composition	11.25 to 11.50
Clean brass turnings	8.00 to 8.25
Composition turnings	9.00 to 9.50
Lead, heavy	4.20 to 4.25
Lead, tea	3.95 to 4.00
Zinc scrap	4.30 to 4.40

Metals, Chicago, November 15.—There is a good demand for casting copper, and the best brands are a little stronger than 13c., Chicago. Lead is quiet. Tin continues to fluctuate, the latest quotation for carloads being ½c. lower than last week. Spelter maintains the advance that was noted last week. We quote Chicago prices as follows: Casting copper, 13c.; lake, 13⅛c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 36½c.; small lots, 39c.; lead, desilverized, 4.35c. to 4.40c., for 50-ton lots; corroding, 4.60c. to 4.65c., for 50-ton lots; in carloads, 2½c. per 100 lb., higher; spelter, 5.90c. to 5.95c.; Cookson's antimony, 10½c., and other grades, 9c. to 10c., in small lots; sheet zinc is $7.75, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 12¾c.; copper bottoms, 10¾c.; copper clips, 12c.; red brass, 11¼c.; yellow brass, 9c.; light brass, 6c.; lead pipe, 4¼c.; zinc, 4¼c.; pewter No. 1, 24½c.; tin foil, 30c.; block tin pipe, 33c.

Metals, St. Louis, November 14.—Lead is steady at 4.27½c.; spelter is in active demand and higher at 5.90c., both East St. Louis. Zinc ore is strong at $45 per ton, Joplin base. Tin is quoted at 36.12½c. per pound; antimony (Cookson's), 8.50c.; lake copper, 13.35c.; electrolytic, 13.22½c.; all at St. Louis. For finished metals the demand the past week was moderate from the trade, but the leading manufacturer sold five carloads of metal in a single day to railroads.

Iron and Industrial Stocks

NEW YORK, November 16, 1910.

The prices of active stocks on the New York Stock Exchange declined in some cases sharply on November 9, the day following the election, and in very few instances have the opening prices of that day been reached in the past week. United States Steel common opened at 81½ on November 9 and declined to 78¼. On the day following the low point for the week was reached at 76. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com	9⅛	Pressed St., pref.	96 - 96½
Allis-Chalm., pref.	30½ - 31	Railway Spr., com.	33½ - 35⅝
Beth. Steel, com.	30½ - 33¼	Republic, com.	33½ - 36
Beth. Steel, pref.	59 - 61¼	Republic, pref.	96 - 98½
Can, com.	9½ - 10½	Sloss, com.	48¾ - 52½
Can, pref.	74¼ - 76⅞	Pipe, com.	15⅞
Car & Fdry, com.	51½ - 55¼	Pipe, pref.	55 - 57½
Car & Fdry, pref.	114½	U. S. Steel, com.	76 - 81¼
Steel Foundries	45⅝ - 48½	U. S. Steel, pref.	116⅝-118⅝
Colorado Fuel	32½ - 35½	Westinghouse Elec.	69½ - 74⅛
General Electric	151½-154	Va. I., C. & C.	50 - 55
Gr. N. ore cert	57¼ - 60⅞	Am. Ship, com.	*77 - 80
Int. Harv., com.	111 - 115	Am. Ship, pref.	110⅝
Int. Harv., pref.	*120¼-123½	Chi. Pneu. Tool	39½ - 40
Int. Pump, com.	42¼ - 44¼	Cambria Steel	42½ - 43½
Int. Pump, pref.	83⅛ - 83⅝	Lake Sup. Corp.	24⅝ - 25⅝
Locomotive, com.	38 - 40⅜	Pa. Steel, pref.	104½-105
Locomotive, pref.	106 -106⅜	Warwick	10½ - 10⅝
Nat. En. & St. com.	16 - 16½	Crucible St., com.	12½ - 13½
Pressed St., com.	33 - 35	Crucible St., pref.	77½ - 79½

* Ex dividend.

Dividends.—The General Electric Company has declared the regular quarterly dividend of 2 per cent., payable January 14.

A dividend of 50 cents has been declared on Great Northern Iron Ore Properties, payable December 1. In August 50 cents was declared, and in February 50 cents; in August, 1909, $1.

A meeting of stockholders of the Union Switch & Signal Company, Pittsburgh, will be held December 14, for the purpose of voting on a proposed increase in the capital stock of the company from $2,500,000 to $5,000,000.

The Harbison-Walker Refractories Company, Pittsburgh, Pa., has declared a quarterly dividend of ½ of 1 per cent. on the common stock, payable December 1.

The plant of the Canton Sheet Steel Company is practically completed and will be ready for operation by December 1. Six of the eight mills will be started first.

Pennsylvania Industries and New Taxation Laws

HARRISBURG, PA., November 15, 1910.—Manufacturing interests in Pennsylvania, especially those engaged in iron and steel, are awaiting with considerable interest the recommendations of the State Legislative Commission named to draft new taxation laws for submission to the Legislature when it meets on January 3, 1911. This commission has been in session for months, and it is understood that it will suggest some radical changes in the taxation laws.

The chief change and one most affecting the iron and steel trades relates to taxation of capital actually engaged in manufacturing. Under present laws such capital in the form of capital stock is not subject to taxation, although loans and bonded debt are taxed at the rate of 4 mills. It is said to be the intention to place a tax of 2 mills on the dollar of capital employed in manufacturing. For several sessions efforts have been made in this direction, the members from the agricultural counties having always made it a part of their platform and endeavored to have bills providing for a 5-mill tax placed on the statute books. It is certain that there will be opposition to such a tax from members from the industrial counties, as it would affect millions of dollars now engaged in the metal and allied industries.

It is also said that labor interests will endeavor to have a new employers' liability bill passed at the coming session. A bill was passed a few years ago, but was attacked in the courts.

The State authorities will back an effort to have the chief of the Bureau of Industrial Statistics vested with the powers of labor bureaus in other States. Bills looking to this end have been drafted. In the session of 1909 an effort was made to create a new bureau, with arbitration powers, and to open employment agencies, but as it contemplated a new department it was not received favorably.

Canadian Bounties on Iron and Steel

The following companies participated in the bounties paid by the Dominion Government on iron and steel in the fiscal year ended March 31, 1910:

Algoma Steel Company	$318,814
Dominion Iron & Steel Company	1,029,503
Nova Scotia Steel & Coal Company	97,345
Hamilton Iron & Steel Company	238,408
Lake Superior Iron & Steel Corporation	54,628
Ontario Iron & Steel Company	4,463
Canada Iron Corporation	41,146
Atikokan Iron Company	15,099
Standard Chemical Company	10,120
Total bounties paid	$1,808,533

Charles C. Murray of Pittsburgh, trustee in bankruptcy of the Shenango Iron & Steel Company, announces that the plant at Wheatland, Mercer county, Pa., including all machinery, stocks, &c., will be offered at public sale on December 21. The plant contains a puddle mill, a 10-in. mill, 18-in. mill, bar mill, coal conveyor housing and engine, fagot room, machine shop, blacksmith shop, ore house, time office, brick shed, pattern shop, tool house, power house, rolling mills, cranes, scales and all other machinery necessary for the manufacture of bar iron.

The new buildings for the department of practical mechanics at Purdue University, Lafayette, Ind., were formally dedicated November 12. President Stone in his address referred to the beginning of the engineering schools 30 years ago in a modest work-shop in the basement of one of the university buildings. The new plant represents the fourth of its kind installed at Purdue, each of the preceding ones having been outgrown. The new building and equipment cost $170,000, not including the equipment previously belonging to the department. Melville W. Mix, president of the Dodge Mfg. Company, Mishawaka, Ind., and president of the Manufacturers Bureau of Indiana, discussed the value of the new buildings and plant from the viewpoint of the manufacturer who gets his technically trained men from the universities. Twelve universities and colleges, 15 high schools, and many manufacturing companies and railroads sent representatives to the exercises.

W. Edgar Reed, consulting electrical engineer, 1312 Machesney Building, Pittsburgh, engineer for the new municipal plant, Millvale, Pa., reports that it has been placed in operation. The buildings are modern and contain two 100-hp. Titusville Iron Works boilers, two 90-hp. Ideal engines direct connected to Westinghouse alternators, rectifiers, arc lamps, &c. Mr. Reed is also engineer for the new municipal light and power plant at Martins Ferry, Ohio, which contains two 300-hp. Erie City boilers and Buckeye engines, direct connected to a 450-kw. and a 250-kw. generator. He has also made an inspection of the new municipal water and light plant at Cambridge Springs, Pa., where a 100-hp. Skinner engine, direct connected to a 60-kw. Westinghouse generator, Westinghouse rectifier and the metallic flame system of arc lighting is used. Mr. Reed also undertakes the laying out of large units in the manufacture of iron and steel.

The No. 1 blast furnace of the Jones & Laughlin Steel Company at Aliquippa, Pa., has gone out of blast and the No. 1 stack of the Dunbar Furnace Company at Dunbar, Pa., has been started up, after being idle for about two months for repairs. The No. 4 blast furnace of Republic Iron & Steel Company at Hazelton, near Youngstown, Ohio, is nearly completed and will be ready for blast about January 1. It is a duplicate of the No. 3 furnace, having a skip hoist and all modern appliances. The stack will have a daily capacity of about 500 tons.

The Jones & Laughlin Steel Company of Pittsburgh, in order to supply adequate transportation facilities for its employees at its new plant at Aliquippa, Pa., will build a street car line of its own. A company to be known as the Woodlawn-Southern Railway Company has been organized and has applied for a charter, and an electric street car line will be built from the works at Aliquippa to the different localities near Aliquippa, in which the men make their homes.

The bi-monthly examination of sales sheets of the Republic Iron & Steel Company, and other bar iron makers, held in Pittsburgh November 12, shows the puddling wage scale for November and December will be based on a 1.35-cent card, which nets the puddlers $5.87½ a ton, a decrease of 25 cents as compared with the rate for September and October. The wage scale in the finishing department is decreased 2 per cent. This scale affects puddlers belonging to the Amalgamated Association and the Sons of Vulcan.

The Coin Machine & Mfg. Company of Portland, Ore., has purchased 30 acres of land at Trafford City, Pa., on which a new plant will be erected. The company, which is capitalized at $2,000,000, has a plant at Portland, Ore., and one at Kansas City, Mo. The selection of Trafford City for the Eastern works was decided upon on account of its being close to the supply of raw material and the shipping facilities offered. Work on the new plant will be started in a short time.

The Stonega Coke & Coal Company, Inc., has removed its general offices from Stonega, Va., to Big Stone Gap, Va.

The Machinery Markets

Trade in most machinery selling centers is a shade better than it was a week or two ago. The railroads continue to support the market by placing orders for single tools and it is apparent from the inquiries that are out that many railroad repair shops are in need of equipment. An active demand for woodworking machinery continues in the Pittsburgh market, the orders coming largely from the South. Sales are slow in Cincinnati, but machine tool builders there see a good business ahead as they continue to make up machines for stock. Inquiries have increased in Chicago and there is a small list out from a Western railroad, calling chiefly for machine tools. Trade is strengthening in the South and in the Southwest. In the latter market interurban railroads are the principal buyers, and it is announced there that the Atchison, Topeka & Santa Fé Railroad will shortly purchase tools for a repair plant. In other markets business continues about the same, but there are encouraging reports based on increased inquiries.

New York

NEW YORK, November 15, 1910.

The railroads are doing some scattered buying in the New York market, and there are inquiries out for good sized lists of equipment for early delivery to two Newburgh, N. Y., manufacturers whose plants were visited by fire recently. Beyond this there is little in the way of actual business before the trade, but some enterprises that have for one reason or another been held in abeyance of late give promise of materializing in orders soon. The railroad buying has been done largely by the Delaware, Lackawanna & Western Railroad, and a few orders have been placed by the Grand Trunk Railroad and the New York Central Lines. These were largely in the way of single machines taken for replacement. The shipbuilding companies of the Atlantic coast and on the Great Lakes have been doing a little purchasing for equipment needed to take care of the winter repair work, which has been coming into the Great Lake shops especially in good volume. The demand for machines in this market for export is helping to support the trade materially, and some good orders have been placed for mining equipment for delivery in Mexico. There is a continued strong demand for second-hand machinery. In a number of instances recently large manufacturers who have let their equipment run down or were for some reason in a hurry for machines have bought second-hand material from stock in order to obtain immediate deliveries.

The Coldwell Lawn Mower Company, Newburgh, N. Y., is inquiring for considerable equipment to replace machinery destroyed by fire November 11, when the principal shop building of the plant was burned to the ground. The structure, which was 200 x 300 ft., contained considerable new manufacturing equipment and the loss, which is covered in insurance, is estimated at $165,000. The storehouse, containing a stock of 50,000 lawn mowers, was saved from the flames, and the company has a new addition to the plant, which was begun some time ago, nearly ready for occupancy, consequently the machinery equipment will be purchased immediately and the plant will be put in operation as soon as possible.

The Lackawanna Mfg. Company, manufacturer of gasoline motors, whose plant adjoined that of the Coldwell Lawn Mower Company at Newburgh, was also a sufferer from fire. The larger part of its manufacturing plant was destroyed, but fortunately a new plant across the street, which was just recently completed, was saved and the company's business will be transacted from there. The Lackawanna Mfg. Company, which is closely connected with the Coldwell Lawn Mower Company, is also buying machinery which is to be installed as soon as deliveries can be made.

The General Electric Company, Schenectady, N. Y., is progressing with its plans for a large plant it has under way at Erie, Pa., and it is asserted that it will not be long before a good sized list of machinery equipment is in the market covering requirements for the plant. It will be remembered that the company purchased 700 acres of ground at Erie several years ago, and it planned at that time to use about 400 acres for the erection of residences for employees and the rest of the land was to be devoted to manufacturing purposes. The company's plans were abandoned for the time being because of the business panic, but recently some manufacturing buildings have been put up there and the property has been utilized, but by no means to the extent originally intended. It is said that the company's business has been growing so rapidly of late that it has been considering the carrying out of its original plans in connection with the Erie property, and accordingly some trade may ensue from that source.

The Wasson Piston Ring Company, Bayonne, N. J., has been organized, with an authorized capital stock of $35,000, and the company is now formulating plans for the erection of a manufacturing plant. At present the company's product is being made at the works of the Crane & Whitman Company of Bayonne. The company manufactures piston rings for internal combustion engines, and according to its charter it is also privileged to make motors and piston packing. The incorporators of the company are Robert B. Wasson, 9 Sylvester street, Cranford, N. J.; Foster Crampton, 60 Wall street, New York; Hubert T. E. Beardsley, 45 Cedar street, New York, and Louis Burnstein, 180 Pulaski street, Brooklyn, N. Y.

There are indications that the Simms Magneto Company will shortly place orders for equipment to be installed in its plant now in course of construction at Watsessing, N. J. The plant, which is well under way, will consist of a two-story building, 150 x 300 ft. It is adjacent to the tracks of the Delaware, Lackawanna & Western Railroad. Mr. Simms of the Simms Magneto Company is expected home from Europe shortly and, according to people in the trade who are acquainted with the company's affairs, a list is now being made up by William Shuler, the purchasing agent, which will be acted upon as soon as the head of the company returns.

The Victor Motor Truck Company, Buffalo, N. Y., has been reorganized and reincorporated, with a capital stock of $250,000, and will build and equip an extensive plant. The present factory is at 1457 Niagara street, in the Ross Manufacturing Building.

The Dussault Foundry Company, Lockport, N. Y., is rebuilding the portion of its plant damaged by fire recently, erecting an addition 55 x 65 ft. and a new cupola room 20 x 45 ft. It will put in a No. 3 Whiting cupola, a cinder mill, new core ovens and additional molding machines, and will also install a 10-ton traveling crane with 30-ft. span runway.

The Larkin Company, soap manufacturers, 663 Seneca street, Buffalo, John D. Larkin, president, is receiving bids for a 2000-hp. electric power plant, steam heating plant and elevator equipment for an eight-story building which it is to erect. The electric power plant, for which Niagara Falls power will be used, will require alternating current motors, 5 to 50 hp.; transformers, switchboards, ammeters, &c.

The Aluminum Castings Company, Buffalo, N. Y., has let contract for a one-story brick and steel heating plant which it will build in connection with its new foundries at Elmwood and Hertel avenues and the Erie Railroad.

The New York Central Railroad Company is enlarging its machine shop on Broadway, opposite Goethe street, in its East Buffalo yards.

The Standard Oil Company is building a one-story car repair shop at its Atlas Works, Elk and Babcock streets and the Buffalo Creek Railroad, Buffalo, N. Y.

The Rochester Fibre Box Company, Rochester, N. Y., John A. Levis, president, 129 Andrew street, is having plans prepared for a new factory which it will erect early next spring at an approximate cost of $50,000.

The Allegheny Valley Brick Company is placing orders for equipment required for the plant it is building at Olean, N. Y., including two 165-hp. gas engines and necessary brick-making machinery.

The Century Steel & Iron Company, 1445 Niagara street, Buffalo, N. Y., W. J. Wark, president and manager, is building an addition for the manufacture of Bessemer steel castings to its present foundry plant.

The Standard Welding & Mfg. Company, Buffalo, N. Y., recently incorporated with capital stock of $10,000, has leased manufacturing premises at 951 Main street, where it will engage in the manufacture of sheet metal specialties and general custom welding, with especial reference to the automobile trade, using the Linde Air Products Company's oxyacetylene process. Thos. H. Muffitt is president of the company, formerly vice-president of the National Welding & Mfg. Company, manufacturer of the Model acetylene gas generators, and Jno. L. Heider is secretary and treasurer.

THE MACHINERY MARKETS

It is the intention of the company a little later on to manufacture a line of acetylene gas generators.

The Onondaga Bed Mfg. Company, Syracuse, N. Y., is in the market for a punch press to be installed in an addition now in course of construction.

Business Changes

The Pawling & Harnischfeger Company, Milwaukee, Wis., has opened a branch office in the Washington Building, Portland, Ore., which will be in charge of R. K. Morse, who for some years past has been a member of the company's engineering staff at the home office.

Safety Device Catalogues Wanted

Kent McNaughton, Association Rooms, Stevens Building, Detroit, Mich., requests catalogues from manufacturers of safety devices. He would like to receive as much literature on this subject as possible and therefore requests manufacturers whose catalogues show safety devices in connection with their own machines or apparatus to send him copies of such publications.

Chicago

CHICAGO, ILL., November 15, 1910.

The settlement of political uncertainties has not brought any rush of business to Chicago machinery houses. There is a slight improvement in the number of inquiries and a little more business is being closed, especially in smaller tools and machines, and dealers are encouraged to believe that this improvement will continue. The more conservative among Chicago machinery men, however, do not expect a broad market until after the first of the year. One Western railroad is in the market for a small list of tools, and a good indication is that the mechanical men of several railroads are looking around on the street, getting data for future purchases.

Authorities in the banking world estimate that general business in the West is a little above normal, except in railroad purchases. The machine tool trade is, therefore, a striking exception to general conditions. The fact that business in other lines is good will undoubtedly have its ultimate effect on buyers of the best class of tools. The plow manufacturers at Moline, Ill., have begun working a 12-hour day for the winter, and, while they are not buyers of many high class tools, the fact that their business is so good is encouraging. A serious check on the operations of manufacturers in other lines who would be good buyers of tools is that interest rates are high, and it is hard work to borrow even at high rates. There has been an unusual demand on the banks the past year for money to carry crops. It takes twice as much money now to finance a car of hogs as it required a few years ago, and the same thing is true of cotton. The market prices of wheat and corn have been above normal. It is a part of the legitimate business of the banks to carry all of these commodities from the time they leave the hands of the producer until they go into consumption. High prices increase the amount of money required for this business, and the inflation in commodity values has been responsible for high interest rates and the unusual demand for funds. This condition goes around the circle to the railroads. The bankers expect a slow liquidation during the coming year in commodity prices which will tend to release funds and make conditions easier for manufacturers, railroads and other users of borrowed capital.

The Chicago, Rock Island & Pacific Railroad is in the market for a small list of tools.

The Moline Plow Company, Moline, Ill., at a special meeting of its stockholders authorized an increase in its capital stock from $7,000,000 to $9,000,000, the increase being necessary for future expansion and extra working capital.

The People's Power Company, Moline, Ill., has closed a contract to furnish power to six allied manufacturing concerns of Moline and East Moline. These companies are Deere & Co., Deere & Mansur Company, Moline Wagon Company, Velie Motor Company, Union Malleable Company and the Marseilles Company. The power plant of the Deere shops will be retained to supply steam for heating.

Forsyth Brothers Company, Chicago, after negotiating for some time for the purchase of a site on which to locate its new plant, advises that it has purchased 23 acres of land at Harvey, Ill., on the Illinois Central and Grand Trunk railroads, with switching facilities on the Baltimore & Ohio Terminal. The company has already begun the erection of a building, 100 x 400 ft., which it is expected will be ready for occupancy by the first of the year. Other buildings for which plans have been prepared will be erected in the spring. The company is at present located at 213 Institute place, and manufactures railroad supplies, but will abandon this plant as soon as the new one is completed. A considerable amount of new equipment will be purchased.

The new building of the Otis Elevator Company, at Quincy, Ill., which will join the present unit on the west, is under construction. It will be 100 x 375 ft.

The Sterling Hearse & Carriage Company, Sterling, Ill., has been incorporated with a capital stock of $10,000. The incorporators are A. A. Wolfersperger, C. E. Bensinger and H. C. Newell. The company will engage in the manufacture of vehicles.

The Clark Delivery Car Company, Chicago, certifies to an increase in its capital stock from $5000 to $150,000.

The Greenberg Automatic Fitting Machine Company, Chicago, has been incorporated with a capital stock of $100,000. The incorporators are Wm. F. Smith, Chas. W. Kohn and Samuel E. Greenberg.

The Decatur Fountain Company, Decatur, Ill., certifies to an increase in its capital stock from $50,000 to $100,000.

Arthur J. O'Leary & Son Company, Chicago, advises that the first building of its new plant, 100 x 300 ft., is nearly completed and foundations for installing the machinery are now being placed. It is expected that the new plant will be in operation by the first of the year.

The S. G. Taylor Chain Company, Chicago, Ill., has purchased a site at Hammond, Ind., upon which it will erect a plant for which plans are now being prepared. The company also operates a plant at Maxwell, Ind., which will be moved to Hammond upon completion of the new factory. The Chicago plant will eventually be moved to Hammond.

Philadelphia

PHILADELPHIA, PA., November 15, 1910.

Very little change in the week to week volume of business is reported by either merchants or manufacturers, and from present indications a continued dull market is anticipated. The larger buyers show no disposition to make further purchases, as the demand for their own products has shown no marked improvement. The railroads continue light buyers, purchases being confined to single tools, as a rule, for replacement purposes. No information is available as to requirements of the railroads for next year, and it is now believed that nothing in this direction will develop until after the turn of the year. Local merchants report sales confined largely to single tools. A few propositions, which have been before the trade for some months, covering a number of tools, are now believed to be in shape for early closing. Machine tool builders report the demand as irregular, and, as a rule, no change in operative capacity is reported, there being enough scattered business to keep plants working at about the same rate, varying in most cases from 50 to 75 per cent. No betterment is reported in the demand for tools for export. Second-hand machinery merchants report but a light demand.

The foundry situation is unchanged. Jobbing foundries are fairly busy, but there has been little fresh demand for machinery castings. While there is a fair inquiry for steel castings, foundry plants are not very actively engaged.

The Eynon-Evans Mfg. Company is considering the installation of new furnaces in its brass foundry, which would increase the capacity about 30 per cent. This company reports a fair volume of general business coming in, with some departments quite active.

The Winton Motor Car Company, Baltimore, Md., is having plans prepared for the erection of a large garage on Maryland and Mount Royal avenues, in that city, bids for the construction of which will be asked at an early date.

The Greater Reading Hotel Company, Reading, Pa., has awarded a contract for a brick and steel fireproof nine-story hotel, from plans by J. H. Windrim of this city, to the Westlake Construction Company, St. Louis, Mo., which will take bids for the various branches of work to be done.

Estimates are being invited by the Packard Motor Car Company for a large garage on Broad street, from Pearl to Wood streets. It will be of brick, steel and reinforced concrete, eight stories, with frontage of 71 ft. and depth of 164 ft. 3 in.

The Industrial Supply & Equipment Company, 407 Sansom street, this city, has been appointed sales agent in the Philadelphia territory for the Jerguson Mfg. Company, Boston, Mass., manufacturer of Wilt-Bonco self-adjusting reflex water gauge and Wilt-Bonco engineering specialties.

Negotiations are pending for the sale of the plant of the Allentown Foundry Company, Allentown, Pa., for use in manufacturing machinery for braiding electrical wires.

The Lorraine Motor Company is taking estimates for a large garage building at Thirty-seventh and Ludlow streets.

The Board of Awards, Baltimore, Md., will receive bids

THE MACHINERY MARKETS

until November 30 for a new office and laboratory building and a transformer house at the Back River sewage disposal works, as shown on plans at the office of the Sewage Commission, 904 American Building, Baltimore, Md.

The Metropolitan Electric Company, Reading, Pa., will, as soon as the service from its new plant in that city is in full operation, discontinue service from its water power plant at Klapperthal, near Reading, and may ultimately rebuild the latter plant.

A contract has been awarded to F. L. Hoover & Sons for the construction of a new boiler house, 35 x 40 ft., a three-story addition, 30 x 40 ft., and a 30 x 60 ft. addition to the mill of the Megargee Paper Mills at Modena, Pa. The boiler to be installed in the new boiler house has already been contracted for.

The Markle coal interests are behind the incorporation of a number of power companies to operate in the vicinity of Hazleton, Pa., charters having been secured a few days ago for four companies to furnish electricity for light, heat and power in Hazleton and three adjoining townships. The incorporators are A. Markle, C. B. Houck and W. H. Lawall of Hazleton. The Pardee interests established a number of power companies in the same region several years ago.

The Sciple-Gouchenour Company has been chartered to manufacture boilers and machinery in Philadelphia. The capital stock is $18,000, and the incorporators include H. M. Sciple, W. E. Gochenour and C. B. Sands, all of Philadelphia.

Cincinnati

CINCINNATI, OHIO, November 15, 1910.

Machine tool traveling salesmen generally report excellent business in sight, but complain of the scarcity of actual orders. There is also spirited competition, and it is stated that a few firms have been cutting prices, but this is not confirmed. Some tool builders are accumulating stocks, but have not yet the number of tools normally carried on hand. Should the expected awakening in business occur, the builder able to make prompt shipment will have a decided advantage.

Second-hand machinery is moving a little better and a steady improvement is looked for. Except for the smaller sizes of motors and dynamos, electrical machinery is slow, but indications are that the spring season will be a good one.

Machinery supply dealers are booking only a fair business, but report improvement over the corresponding period of last year.

The John J. Bruce Company's foundry on Colerain avenue, Cincinnati, is one of the busiest in this section of the West. The company makes a specialty of special railroad castings.

Recent sales of the Norton Machinery Company, Cincinnati, include a 100-kw. direct connected generator and engine to the Newport Rolling Mill Company, Newport, Ky.; a 1200-kw. generator and engine to the Cincinnati Traction Company, and a 250-hp. boiler to the Cincinnati Cooperage Company. The company also reports a good business in small engines and boilers for contractors.

The Mt. Vernon Electric Company, Mt. Vernon, Ohio, is reported to have plans under way for a large addition to its power house.

The Cincinnati Machinery Company, Cincinnati, has been incorporated with $30,000 capital stock by H. Williams, John W. Daly, Chas. Follett, Thos. H. Kelley and F. M. Kelley. The company has already been doing business as new and second-hand machinery dealers, with offices in the Johnston Building.

A meeting has been called of the Cincinnati branch, National Metal Trades Association, for November 17, at which will come up for discussion the proposed employers' liability law and the question of revising the apprentice system. Arrangements will also be concluded for the annual meeting to be held at the Business Men's Club December 8, at which a large number of manufacturers from other cities will be in attendance.

The Akron Belting Company, Akron, Ohio, has increased its capital stock from $100,000 to $200,000.

There is a persistent, but unconfirmed rumor, that the Baltimore & Ohio Railroad Company is preparing plans for a large repair shop to be located at a point near Columbus, Ohio.

The new foundry and machine shop additions to the plant of the Laidlaw-Dunn-Gordon Company, Elmwood place, Cincinnati, have been completed and the company expects to have its equipment installed and in operation before January 1.

The Rahn-Carpenter Company, Cincinnati, is working on an order for several of its gap lathes for shipment to Japan.

J. M. Robinson, president of the American Mfg. Company, Chattanooga, Tenn., manufacturer of hardware specialties, was in Cincinnati last week for the purpose of purchasing the necessary machinery to rebuild the Chattanooga plant recently destroyed by fire.

The roof is now being laid on the new four-story reinforced concrete addition to the plant of the R. K. Le Blond Machine Tool Company, Cincinnati. This building will be used entirely by the milling machine department.

The New Idea Spreader Company, Coldwater, Ohio, is making rapid progress on the construction of its new plant and it is expected that the main building will be ready for operation by February 1. Buildings now under construction have an approximate floor space of 100,000 sq. ft., and several other buildings are being planned for erection next spring. All machinery will be driven by electric motors, the power being generated in the company's own power plant. A good many special machines are being built to order.

The Vim Motor Mfg. Company, Sandusky, Ohio, has increased its capital stock from $25,000 to $60,000.

Press dispatches announce the incorporation of the Carr Furnace Company at Wheeling, W. Va. The capital stock is given as $10,000, and the incorporators are Peebles Tatum, A. S. List, C. E. Blue, W. M. Carr and S. M. Noyes, all of Wheeling.

Cleveland

CLEVELAND, OHIO, November 15, 1910.

The local machine tool market is still inactive. Little new business and few inquiries came out during the week. With the excitement of the political campaign over the feeling is better and dealers are looking for an improvement in the volume of business, although with the end of the year so near at hand it is expected that some who have been delaying their purchases of machinery will now wait until after January 1. Some prospective business in the shape of inquiries regarding machinery equipment for plant additions developed during the week, but these extensions have not yet been definitely decided upon. More second-hand machinery is being offered than for some time, the most of this coming from small machine shops that have been affected by the recent light demand for automobile work. The demand for mill supplies is only moderate and dealers are allowing stocks to run low, thinking that possibly prices may be lower later.

Among manufacturers in metal working lines the general situation shows little change, but the outlook is regarded as favorable. Plants are quite well filled with work and with few exceptions are being operated at full capacity.

In the foundry trade plants that make light castings for various purposes are well filled with work, but the demand for heavy and machinery castings is dull.

The new plant which was recently announced would be built in Cleveland by the Cleveland Foundry Company will be owned and operated by a separate corporation, composed by men who are officers and stockholders of the Cleveland Foundry Company. The new company has been incorporated under the name of the Cleveland Metal Products Company with a capital stock of $200,000. The company has purchased a 16-acre site at Callamer avenue and the Nickel Plate Railroad, and will at once erect two buildings of brick and steel construction. One building, 60 x 170 ft., two stories, will be used as a press shop, and the other, 80 x 200 ft., one story, will be used for an enameling plant. The company will do the enameling required by the Cleveland Foundry Company and will bring out a line of metal stampings, including lamp shades, outdoor lamps, railroad signals and other products. No power plant will be installed as the company will secure electricity for power from a commercial company. The only machinery to be purchased will be of a special character.

The Sabin-Curtis Machine Company, Cleveland, machinist and builder of special machinery, is building a new shop at 6536 Carnegie avenue, which will largely increase its present capacity. The new building is 46 x 130 ft., and two stories. Some new machine tool equipment has been purchased and the company is in the market for electrical equipment, which will probably consist of five 7½-hp. motors.

The Warren, Ohio, Board of Trade has closed a contract with the General Foundry Company at Bradford, Pa., to build a large plant in Warren. The company is to be given a 30-acre building site and agrees to expend $50,000 in buildings and machinery and to furnish employment for 150 men.

The Pilliod Bros.' Company, Toledo, Ohio, has been incorporated with a capital stock of $100,000 by Henry J. Pilliod, Julian H. Tyler, Charles J. Pilliod, John F. Kumler, Jr., and Robert Newbegin. It is announced that the company will manufacture a patented valve gear for locomotives and will occupy the old Shelby Tube Company plant on Dorr street.

The Perfect Fireless & Electric Cooker Company, Toledo,

THE MACHINERY MARKETS

Ohio, has been incorporated with a capital stock of $50,000 by Luther D. Smith, W. A. Humphrey, Charles F. Nighswander, Max C. Roth and E. R. Kirkendall. The company will manufacture a fireless and electric cooker.

The Marine Boiler Works, Toledo, Ohio, will enlarge its plant by the erection of an addition, 80 x 120 ft. This concern, which has confined its product to marine boilers, will in the future make other types of boilers.

The Fremont Stove Company has an inquiry out for several grinders and polishing machines for a new plant that it is building in Fremont, Ohio.

The Taylor & Boggis Foundry Company, Cleveland, reports business good in all of its departments, and that the total volume of its business during the past 10 months equaled that of the entire year of 1909.

The Horsey Mfg. Company, Cleveland, has been incorporated with a capital stock of $15,000 by E. T. Horsey and others. The company will build a plant for the manufacture of the Horsey no seamer patcher for inner tubes of automobiles and general tire repair work. The company has all the tool equipment that it will need for the present.

The Reliable Machine Company, Cleveland, tool maker and machinist, will shortly move from its present quarters, 224 High avenue, to a new plant now being erected at 5320 St. Clair avenue. The building is 70 x 80 ft. and two stories. H. J. McGivern is manager of the company.

Because of the large amount of orders on hand the Thew Automatic Steam Shovel Company, Lorain, Ohio, expects shortly to put on a night shift, increasing its working force 40 per cent.

Plans are now being prepared for a large one-story shop, including power plant, to be erected at Bucyras, Ohio, by the Summer Motor Company.

New England

BOSTON, MASS., November 15, 1910.

The Boston dealers are not doing a large business. A few isolated good orders have been booked, but as a whole trade continues dull. A few of the machine tool builders are busy, but the majority are producing at a rate exceeding the demand, filling their storerooms in anticipation of a better condition of business. Rumors of large requirements in this territory are current, but to date have not materialized in actual inquiries. The election has done no harm to the market. On the contrary, the popular opinion is that the atmosphere has been cleared, with the promise of distinctly beneficial results.

The suggestion is made that a closer union be formed between the various associations whose members are the manufacturers and dealers in machine tools and supplies; namely, the National Machine Tool Builders' Association, the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association, and the Southern Supply and Machinery Dealers' Association. The interests of these bodies overlap in an important way, yet they have never met, either in conventions of the whole, or in joint committees, excepting to discuss some special question which is up for action. One plan is to have a permanent joint committee, the duty of which would be to consider matters of mutual interest, and to report back to the associations which may be affected. The supply associations have met together, that is to say, in the same city. But the National Machine Tool Builders have not been included in the immediate deliberations, as a rule. At the recent New York convention of this latter organization the suggestion was made that the National Supply and Machinery Dealers' Association hold its next meeting coincidently with the Machine Tool Builders. This appears to be impossible. The Supply Association has its annual meeting in the spring, the Machine Tool Builders in the autumn. The American Supply and Machinery Manufacturers' Association will meet next spring in Louisville, Ky., and has invited the two dealers' associations to hold their meetings at the same time and place. Therefore, it is unlikely the National Supply and Machinery Dealers' Association can arrange even to hold its annual meeting in conjunction with the Machine Tool Builders at the latter's semiannual meeting at Atlantic City in May. The standing joint committee might have the effect of amalgamating interests; further, to the important benefit of both the machinery and supply trades.

The Autogenous Welding Equipment Company, 41 Bay street, Springfield, Mass., which does autogenous welding and cutting, and is a dealer for the Davis-Bournonville process, has established a branch at Hartford, Conn., the factory being located at 62½ Church street. Henry Cave is president of the company.

The Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., manufacturer of machinery, is contemplating the erection of an additional machine shop building, 64 x 100 ft., and one story. It is not definitely decided whether work on the building will begin immediately.

The Springfield Mfg. Company, Bridgeport, Conn. manufacturer of grinding machines and abrasive wheels, has brought out an improved machine known as the Springfield-Brandes vertical grinding planer, a massive tool designed to grind work 12 in. wide, 12 in. high and 4 ft. in length. The planer will constitute a standard type with its builders.

The Athol Machine Company, Athol, Mass., manufacturer of vises, grindstones, machinists' tools and hardware specialties, is building an addition to its foundry, 22 x 40 ft., which will be used for an annealing room, and for a sand blast apparatus for cleaning castings.

The Boston Fire Department has fitted up its temporary shops and will have no list of machinery for its new repair building for some time to come.

The Ellery Twist Drill Company, Portsmouth, N. H., manufacturer of carbon and high speed drills, is erecting a one-story hammer shop, 30 x 40 ft., of concrete blocks, which will replace the present shop, which is needed by another tenant of the building.

The Griffin Button Company, Shelton, Conn., states that the loss to its machinery in the recent fire was immaterial.

Yahnig & Cohoon, Bristol, Conn., brass founders, has purchased a tract of land upon which a new foundry will be erected, the initial unit consisting of a wooden frame building 40 x 60 ft., one story.

The Meriden Keyless Lock Company, Meriden, Conn., has been incorporated under Connecticut laws, and will manufacture keyless locks, egg beaters and adjustable curtain and shade supporters. The factory is located at 50 North avenue. B. Kreuzberger is the president, C. Yauch, vice-president, S. A. Minery, treasurer, and E. Marshall, secretary.

The latest announcement of the plans of the New York, New Haven & Hartford Railroad for improving its system is that $3,000,000 will be expended on the Air Line division between New Haven and Willimantic, including the rebuilding of the bridge across the Connecticut River, and other bridges, to cost $900,000.

New England shipbuilders are rejoicing in the probable award to them of the contracts for three of the new torpedo boat destroyers, two to the Bath Iron Works, Bath, Maine, and one to the Fore River Shipbuilding Company, Quincy, Mass.

Pittsburgh

PITTSBURGH, PA., November 15, 1910.

Orders for heavy machinery are increasing. In West Virginia there is a great deal of activity at present among mining, timber cutting, woodworking, quarrying and stone crushing plants, where extensive improvements have been planned. This is a feature of the trade of the district recently, and the coming year is expected to show important industrial growth. Many electric power plants are to be built, both for public service and commercial use, including the operation of traction lines, while pumping stations, filtration plants, &c., will also call for a great deal of new equipment.

In western Pennsylvania and eastern Ohio few new enterprises have been planned this season, and coming expansion will take the form of additions or remodeling. Railroad buying is gaining in volume, but still consists largely of purchases of miscellaneous material, with isolated orders for equipment designed for shop improvements, new roundhouses, water supply plants, terminal additions, &c. The demand for air brakes has been quite heavy lately.

While no official announcement on the subject has been made, it is understood here that the R. D. Nuttall Company, Pittsburgh, will build a large new manufacturing plant in Claremont, where a site was recently secured. Meanwhile, additional facilities are being provided at the present factory.

Contracts may soon be let for the construction of a car house and repair shops at Fairmont, W. Va., for the Fairmont & Clarksburg Traction Company.

The Morlan-Ricks-Hughes Company recently organized at Pittsburgh, Pa., by Lindley T. Morlan, Clarence L. Hughes and others, will establish a plant utilizing wood products.

The Gourley Water Company is planning the construction of a pumping plant at Big Run, Pa.

The Graham Light & Power Company has been organized at Graham, W. Va., to establish a public service plant, and the intention is to provide sufficient power for the operation of an electric traction line.

A shipment of electrical machinery, comprising 15 carloads, has just been made to the Braden Copper Company, Rancagua, Chile, S. A., by the Westinghouse Electric &

THE MACHINERY MARKETS

Mfg. Company. This includes three large generators to be direct driven by hydraulic turbines.

The Dual Impulse Motors Company has been organized by Frederick C. Tygard, Pittsburgh, and Walter A. Koegler and Chas. H. Abbott, Mt. Oliver, Pa., with $100,000 capital stock, to manufacture an internal combustion engine.

Cuthbert Bros., Pittsburgh, have taken the contract for the new power plant building to be erected by the American Locomotive Company.

Machinery houses here will figure shortly on the equipment of a new plant to be erected by the Canestoga Portland Cement Company, Lancaster, Pa., consisting of a crushing plant, pulverizing mill, kiln house, finishing mill and stock house. A large electric power plant will also be erected and motors used for driving the machinery.

The gate valves, boxes, &c., for the new Parkersburg, W. Va., water works will be furnished by the Ludlow Valve Mfg. Company, Pittsburgh.

H. J. Koontz, Pittsburgh, manufacturers' representative and dealer in new and second-hand machinery, has recently purchased the machinery in a local plant which includes a 200-hp. McNaull water tube boiler, &c., and has also purchased a 5-ton and an 8-ton Frick refrigerating machine. Recent sales made by Mr. Koontz include a 30-ton Wolfe-Linde ice machine to a Philadelphia brewery.

The Imperial Company, Grove City, Pa., manufacturer of the Imperial line of plumbing goods, including self-closing and compression bibbs, basin and bath cocks, is increasing its capital stock from $25,000 to $100,000, for the purpose of enlarging its facilities and extending its business. Its foundry capacity is to be enlarged to accommodate six new molding machines, while the machine shop is to have about 12 new turret lathes added. The buffing department is to be more than doubled. J. M. Reynolds is manager.

Indianapolis

INDIANAPOLIS, IND., November 14, 1910.

The American Foundry Company, Indianapolis, has increased its capital stock from $26,000 to $40,000.

At the annual meeting of the National Wire Bound Box Company, held at South Bend, Ind., the following officers were elected: President, Guilford L. Babcock, New York; vice-president, Howard L. Babcock, Chicago; directors—Clarence L. Millard, Daniel P. Murphy and Harold N. Oldstead, New York; S. M. Robinson and Dr. S. Whitehall, South Bend. The company has factories in many cities.

John Paxson has been appointed receiver of the Clover Leaf Machine & Axle Company, South Bend, Ind., which manufactures axles and automobile parts.

The Court has ordered W. T. Durbin, receiver for the Anderson Carriage Mfg. Company, Anderson, Ind., to accept a bid for the plant of $17,500, made by E. L. Anderson of Union City, Ind.

The sawmill of Thompson, Thayer & McCowen, Evansville, Ind., which was burned October 30, with $30,000 loss, will be rebuilt.

The Board of Public Works, Terre Haute, Ind., is having estimates prepared for the erection of a municipal water works system.

The Hill-Tripp Pump Company, Anderson, Ind., has purchased the factory building of the Wilkie Mfg. Company of that city, and will begin at once the removal of its plant from its present location to the new building, where it will have larger manufacturing facilities.

The Mishawaka Folding Carriage Company, Mishawaka, Ind., which has been in the hands of a receiver, has been reorganized, with Feyer Bros. Mfg. Company, Toledo, Ohio, back of it. The Mishawaka Company manufactures collapsible go-carts.

The Orten & Steinbrenner plant at Chicago for the manufacture of locomotive cranes will be moved to Huntington, Ind., where much of the preferred stock of the company has been bought.

The American Woodwork Mfg. Company has been incorporated at Evansville, Ind., with $30,000 capital stock, to manufacture wood products. The directors are Louis Kramer, F. A. Larkin, E. P. Kramer, P. J. Euler and Owen H. Jean.

Some light is thrown on the financial troubles of the Rider-Lewis Motor Car Company, Anderson, Ind., by the report of the receiver, Thomas J. Delahunt, which says that the company sold 250 cars for $240,876 and that the cost of making them was $289,967, a loss in operation of $49,090. There is about $80,000 of material yet to be worked up and the plant will be kept in operation by the receiver.

Trustee Charles T. Peck has sold the Western Tin Plate Company's plant at Greencastle, Ind., at auction to Austin Lynch of Canton, Ohio, for $50,000. It had been valued at $200,000. The plant was built in 1902 and ran at intervals for four years, being reorganized several times and under different managements. Including a bond issue, the total indebtedness is about $140,000. Mr. Lynch represents the bondholders. An effort will be made to have the plant in full operation again.

The Oswald Motor Works, Goshen, Ind., after a month's shutdown to make changes both in the machinery and management, preparatory for next year's work, has resumed operations.

The Roberts Mfg. Company has been incorporated at Indianapolis, with $10,000 capital stock, to manufacture carburetors and other mechanical devices. The directors are J. N. Kelly, W. H. Roberts and Elmer Wetzel.

The Gosport Electric Light Company, Gosport, Ind., has purchased the lighting plant and system of the Gosport Electric Light & Power Company and is constructing a transmission line from Gosport to Spencer, Ind. The first named company will abandon its own power plant and will purchase its power from the Spencer Light, Power, Heat & Water Company of Spencer.

St. Louis

ST. LOUIS, November 14, 1910.

Business in the machine tool line has been very quiet the past week. Local houses are at a loss to account for this stagnation, as conditions seem right for a fairly active trade. However, the electrical companies, of which St. Louis has five or six prominent ones, keep full of orders, and are constantly increasing their facilities. The decisive vote against State-wide prohibition has put new confidence in the brewery interests, and these are becoming noticeably more active in extensions already.

The Everstick Anchor Company is now operating its new shop in the Cass avenue district. This concern manufactures a self-acting anchor contrivance for telephone and telegraph guy wires, &c.

The Davis Expansion Boring Tool Company has completed its reorganization. A new plant will be erected and considerable machinery will be required.

The Texas Company, the independent oil company in which J. W. Gates is interested, is preparing to erect a large refinery in the western part of the city.

The capital stock of the Gilinwater Mfg. Company has been increased from $10,000 to $20,000.

Philip Thierolf, T. H. Pollock, Henry Schneider and J. P. Falter are arranging to build at Omaha, Neb., a new foundry and gasoline engine works. Plans are now being drawn at Omaha.

The elevator of the Blair Elevator Company, Atchison, Kan., was burned November 1, with a loss of $125,000, partially insured.

The Century Electric Company of St. Louis has leased the two-story and basement building at 1822-24 Olive street, which will give it 15,000 sq. ft. more of floor space. The company also will erect a small building in the rear.

The Centralia Light & Power Company, Centralia, Mo., has been incorporated with a capital stock of $30,000, by R. H. Baldridge, S. M. Locke and E. R. Locke.

The Bimel-Ashcroft Mfg. Company, Morehouse, Mo., has been incorporated with $25,000 capital stock. The incorporators are Fred Bimel, Joseph Ashcroft, P. J. Kimener and others.

The Bruner Gate Mfg. Company, Kansas City, Mo., has been incorporated with $100,000 capital stock. The incorporators are T. T. Bathhurst, J. F. Swarens, Frank J. Morgan and others.

The shops of the Chicago, Burlington & Quincy Railroad at Hannibal, Mo., which were recently destroyed by fire, are being rebuilt.

The Vienna Pearl Button Company, Muscatine, Iowa, has commenced the erection of a large addition. An electric power plant will be installed and the machinery will be motor driven.

The Parker Cattle Guard Company of New Orleans and Birmingham, Ala., will establish a plant in New Orleans to manufacture its patent guard.

The South

BIRMINGHAM, ALA., November 14, 1910.

Trade throughout the Southern States, while still short of normal, is fairly good. A striking feature of the general industrial situation is the rapidly increasing number of woodworking plants, including not only sawmills, planing mills, sash and door factories, &c., but also the establishment of plants for the manufacture of highly specialized projects, such as fine furniture, musical instruments, &c.

THE MACHINERY MARKETS

Many of the larger concerns in the North are establishing branch factories, particularly in the hardwood belts, and local capital is also finding similar investment. Practically all of these plants utilize the best character of modern equipment, with in most cases the application of electric motor drive.

Less has been heard lately than was the case a year ago about the growth of the textile industry in the South, but the new plants which were then started, together with those previously in operation, are now contributing largely to the support of the market. Within the next few months announcements of the building of quite a number of additional mills, as well as allied industries, will also be made in accordance with plans now maturing.

Advices from Marion, Ala., are that the plant of the Marion Light & Power Company, which is equipped with a Crocker-Wheeler generator of 100 kw., driven by a Harrisburg engine, will be enlarged.

De Buys, Churchill & Labouisse, New Orleans, are working up the plans for a large new factory to be erected there by the Orleans Mfg. Company.

A large new plant is to be erected before long by the Genesee Lumber Company, Genesee, La., in place of the one that burned some time ago.

The new shops of the Birmingham Rail & Locomotive Works at North Birmingham, Ala., are nearly completed.

Plans are now under consideration for the sawmill to be built at Clayroy, Fla., by the Clayroy Mfg. Company, which was recently organized in Pensacola, Fla.

The Louisville Metal-bound Box Company, recently organized at Louisville, Ky., has taken over the plant of the Louisville Wire-bound Box Company. The equipment is to be remodeled and considerably extended.

The oil mill of the Meridian (Miss.) Fertilizer Company was totally destroyed by fire October 31. The loss is estimated at $15,000.

The cotton gin near Covington, Tenn., owned by B. B. Lowese, and the Crescent Oil Company of Memphis, was burned November 2, causing a loss of $4000, with $2000 insurance.

The Greenville Chair Company, Greenville, Tenn., has begun the construction of a new plant at that place which will have a capacity of about 1000 chairs a day. The management of the plant will be in charge of Joseph C. Moore, formerly of Lenoir, N. C., who for a number of years was successful in that place in the chair and furniture making industry.

Detroit

DETROIT, MICH., November 15, 1910.

The past week has been rather quiet. Manufacturers and dealers, however, are experiencing a steady run of inquiries for shop and factory equipment or supplies, and the aggregate of bookings is large. In some cases the month of October was rather disappointing, in view of the expectations raised by several spurts of very active buying.

The demand for power and electrical machinery, together with steam, gas and motor driven pumping units, is again giving good support to the market, and it now seems probable that buying on this account will continue liberal through the winter, as numerous improvements recently under consideration are practically certain to be put through before spring.

The J. E. Bolles Wire & Iron Works has taken the contract for the structural part of a three-story shop building, 100 x 100 ft., for the Detroit Forging Company.

The Yeomans Box Company has been organized in Detroit with $50,000 capital to operate a box factory. Arthur and Fred. H. and George Yeomans are the incorporators.

Two return tubular boilers will be needed by John H. Burke, Kalamazoo, Mich., for a hotel building to be known as the New Burdick.

Edmunds & Jones, Detroit, have awarded contracts for their new three-story factory building, which will be 67 x 200 ft.

The Detroit Bridge & Steel Works, Detroit, Mich., has been awarded the contract by the city for the new steel structure to be erected over the Michigan Central Railway.

The Chalmers Motor Company, Detroit, is having plans drawn for a new boiler plant.

The Du Pont Powder Company is erecting a large storage plant at Ironwood, Mich., for which some mechanical equipment will be utilized.

A condensing plant of very large size is to be erected at Adrian, Mich., by the Van Camp Packing Company, Indianapolis, Ind.

The Victor Pump Company, Grand Rapids, Mich., has been incorporated with $12,000 capital stock to manufacture a self-measuring oil pump. The pumps are attachable to any tank or drum and have double ball valves with bronze bottom. Manufacturing will be commenced at once, and the company will purchase a turret lathe, drill press, pipe threading machine, a cutting machine and a buffing machine. The officers of the company are Elmer E. King, president; John Hinesbutter, vice-president; I. N. Seamon, secretary and treasurer.

The Michigan Alkali Company, Alpena, Mich., is erecting a concrete building 200 ft. long to be used as a machine shop, blacksmith shop and storeroom.

The Auto Body & Specialty Company, Flint, Mich., is erecting a new factory building, one story and basement.

Toronto

TORONTO, November 12, 1910.

The manufacturing equipment of the country is being kept under a steady high strain, and the wear and tear and expansion keep on making places for new motive power and new machinery. There seems to be no over-production and no over-extending. Consumers are taking the goods and banks are not hesitating to take the paper that represents such of the business that is not based on cash.

The plant of the Ontario Wheel Company, Gananoque, Ont., destroyed by fire last week, will be rebuilt at once.

Mr. Vantelet, a member of the Board of Engineers the Government has put in charge of the construction of the Quebec bridge, says that the bridge will be 88 ft. high, as compared with 67 ft. as the hight of the bridge formerly under construction there. The span will be 1758 ft., which is 42 ft. less than that of the old bridge. It will be completed, he says, by 1914.

It is announced that the Atikokan Iron Company's furnace at Port Arthur, Ont., will be kept in operation all winter.

The Judicial Committee of the Privy Council in England, which is the court of last resort in the British Empire, has decided in favor of the Standard Ideal Company, Port Hope, Ont., in the litigation between that company and the Standard Sanitary Mfg. Company, Pittsburgh, Pa. The matter at issue was the use of the word "Standard" in the Port Hope company's name. In the Canadian courts the case was decided in favor of the Pittsburgh company. The Standard Ideal Company will now, it is said, increase its manufacturing capacity. It has already under construction at plant No. 2 a building that is to cost about $100,000.

New factories to cost $100,000 are to be added to the plant of the Office Specialty Company in Newmarket, Ont. The contract for the buildings has been let.

Beatty Bros., Fergus, Ont., manufacturers of conveyors, &c., propose to extend their plant.

The Ives Modern Bedstead Company, Cornwall, Ont., is making a large addition to its plant.

The great paper mills to be built by Price Bros. & Co., Quebec, Que., will be at Jonquiere, Que. They will be known as the Kenogami Paper Mills and will employ 800 hands. It is expected that they will be in operation by the spring of 1912.

The Schwab Boiler Heating Company has been incorporated under Dominion laws, with a capital of $100,000, the head office to be at Ottawa, Ont.

The Match Factory Company, whose building operations have been begun at Neepawa, Man., is to put in a large amount of machinery.

The Canadian Pacific Railway Company has given the Canadian Locomotive Company at Kingston, Ont., an order for eight more locomotives, making 18 in all, within the last few weeks.

The Graphite Company at Buckingham, Que., proposes to move its mill to the pits in the vicinity of the town and make improvements in the plant.

The Wilkinson Plow Company's works at Toronto, Ont., were seriously damaged by fire a few days ago.

Daniel Adamson & Co. of Dukinfield, near Manchester, England, are putting in a new exhaust steam turbine engine at the Dominion Steel Corporation's No. 2 Colliery, Glace Bay, N. S. It is to provide 1400 hp. of electrical power for the plants there. This is said to be the only exhaust steam turbine installed in Canada. Two similar engines will, it is said, be installed by the Nova Scotia Steel & Coal Company at its New Glasgow, N. S., works. Exhaust steam from the rolling mills is to be used to generate electricity. The engines are to be 680-hp. low pressure turbines. The statement is made that two 3000-hp. mixed pressure turbines are to be set up for blowing purposes in connection with Canadian blast furnaces.

The ratepayers of Windsor, Ont., voted tax exemption

THE MACHINERY MARKETS

to the Penberthy Injector Company, which will build a factory there.

The Widespread Implement Company is putting up its buildings at Port Dover, Ont. Its planing mills are nearly ready for the machinery, and the foundry building is in a forward state.

The Winnipeg *Telegram* complains that hardly a day passes in which the design for some building or the contract for some large piece of construction is not awarded to architects, engineers, manufacturers or contractors in the United States. The architects, engineers and contractors from across the line have a tendency, it adds, to import materials, outfit and machinery from their own country, for the reason that they are more familiar with American than with Canadian articles of the kind required.

The Manitoba Iron & Bridge Company, Winnipeg, Man., has obtained the contract for the Canadian Northern Railway Company's train shed and viaduct in the city. For the train shed 750 tons of steel are required, and for the viaduct 900 tons.

Proposals have been made to the National Hardware Company, Orilia, Ont., to remove its lock works from that town, but the company has practically decided to enlarge the Orillia plant rather than build entirely new works elsewhere.

Lumby-Stenhouse, Ltd., is building a foundry and machine shop at Fort William, Ont., to cost $40,000.

The question of extending the transmission system of the Hydro-Electric Power Commission from St. Thomas, Ont., to Windsor, Ont., is now engaging the attention of the Commission and the Provincial Cabinet. The distance to be extended over is 120 miles, and the estimated cost of the extension is $1,000,000. Other extensions are under consideration, and a total outlay of $2,000,000 is calculated upon.

Plans have been prepared for a factory to be erected at Walldeeburg, Ont., for the manufacture of an explosive called carlite. The industry is to be carried on by the Dominion Carlite Explosive Company, with a capital of $100,000.

The Ottawa Vacuum Cleaner Mfg. Company, with a capital of $150,000, has been organized in Ottawa, Ont., to manufacture cheaners after a new device under the Gillespie patents. A factory is to be built.

A large addition is being made to the municipal power house in New Hamburg, Ont., in preparation for the installing of transformers for the Hydro-Electric Power Commission's system.

The Sault St. Louis Light & Power Company, Montreal, will apply to Parliament this session for an act extending the time for the completion of its works.

Steel Radiation, Ltd., the corporation recently formed, with head offices in Toronto to take over certain existing companies and to carry on larger operations in the manufacture of radiators, &c., has purchased a site on the Lachine Canal, Montreal, on which a large foundry plant is to be erected. Five hundred men are to be employed.

The buildings of the new stove foundry at Penetanguishene, Ont., are being rapidly brought to completion. The central building is 155 x 187 ft., and the molding shop 40 x 187 ft.

The Southwest

KANSAS CITY, MO., November 14, 1910.

Buying for interurban railroad, power and lighting plants has received fresh impetus lately from the placing of bond issues. The financial situation appears to have cleared within the past week or 10 days, inasmuch as money is moving more freely. Collections are easier and purchases more frequent than they were earlier in the fall.

A large box factory will be erected at Gravette, Ark., by F. F. Crawford and Charles Hockmeister, whose present address is not given.

The Copper Queen Mining Company, Douglas, Ariz., is planning extensive improvements, which will include reverberatory and McDougall furnaces, with auxiliary apparatus.

The Atchison, Topeka & Santa Fe Railway will purchase new tools and other machinery for use in repair work at Temple, Silsbee, Cleburne and Amarillo, Texas.

The Gila Valley Electric, Gas & Water Company, Globe, Ariz., of which A. T. Smith is the leading incorporator, will build a hydroelectric plant of 500 kw.

The contract for furnishing the complete machinery equipment of the new plant to be built by W. T. Carter & Brother at Camden, Texas, has been let to the Lufkin Foundry & Machine Company, Lufkin, Texas.

A bond issue to cover the cost of a pumping plant and water works system has been provided at Wortham, Texas.

Another steam turbine unit will be required before long for the municipal power and pumping plant at Austin, Texas, where one of 750 kw. was installed about two years ago.

An electric power and pumping plant for municipal service is to be built at Marionville, Mo.

The Butler Mfg. Company, Kansas City, Mo., manufacturer of steel tanks, has increased its capital stock from $18,000 to $165,000.

The United Mill Works of Stuttgart, Ark., has been incorporated. The company has a capital stock of $50,000, of which $14,000 has been subscribed.

Southern Texas

AUSTIN, TEXAS, November 12, 1910.

Business conditions in Texas and the Southwest are very satisfactory. While there was a shortage of the cotton crop the good prices that have prevailed for the staple have brought to the farmers as much revenue as is usually obtained from a normal crop. The demand for machinery for various lines of manufacturing is unusually large. Tentative plans are on foot for the establishment of many factories of considerable size in different towns and cities of Texas and Mexico. The development of irrigation enterprises promises to be extensive during the late fall and winter. Much machinery is already being ordered for these projects.

The authoritative announcement is made by Col. S. W. Fordyce of St. Louis, Mo., of the Pierce-Fordyce Oil Association wnich succeeded to the business of the Waters-Pierce Oil Company in Texas, that his concern will erect a large oil refinery to cost more than $1,000,000, either at Houston or Beaumont. The plans also involve the laying of an extensive system of oil pipe lines which will connect the producing fields with the refinery.

Dr. F. S. Pearson of New York and associates who own extensive lumber manufacturing enterprises in the State of Chihuahua, Mexico, will establish a paper mill at El Paso.

John A. Young of Alpine, Texas, and associates who are operating a large marble quarry near here will install new machinery.

At the American Smelting & Refining Company's smelter at El Paso about $250,000 will be spent in improvements, including new machinery.

C. D. Deal of Colorado Springs, Colo., who recently purchased the electric light and ice plants at Palacios, Texas, from Clyde Randolph, will install additional machinery.

The Inspiration Copper Company has under consideration plans for the erection of a 5000-ton concentrating plant at Globe, Ariz.

Extensive exploitation of the underground source of water supply of the State of Chihuahua is to be carried on under the direction of the Chamber of Commerce, Agriculture and Mines of the city of Chihuahua. This organization has appropriated $100,000 to be used in boring artesian wells. If sufficient water supply for irrigating arid areas of land is developed, considerable pumping machinery will be installed.

Rapid progress is being made in the construction of the extension of the Mexico Northwestern Railroad from Terrazas, Mexico, to Madero. The first 45 miles of road from Terrazas to Pearson is finished and in operation. Track laying will soon be started on the 40 miles of grade that has been finished from Madera north. R. M. Dudley has the contract for the construction of this extension.

The Compania Irrigadora de Santa Maria, which was recently organized, with principal office in the City of Mexico, will install a hydroelectric plant and construct an extensive system of irrigation in the Jojutla district, State of Morelos. The electric generating plant will be located at a waterfall on the Apatlaco River. The power will be conveyed by means of transmission lines to a number of towns and plantations of that section. A large amount of pumping machinery will be installed for irrigating tracts of land belonging to the company and others. The construction of a railroad through the lands of the company is now in progress.

The Santa Virginia Mine & Milling Company will install a reduction plant, with cyanide annex, at its mines at Amatlan de Canas, territory of Tepic, Mexico.

The Maravillas y Anexas Mining Company, which operates in the Pachuca district of Mexico, is in the market for considerable machinery for its properties.

Compania Explotadora de Minas will erect a reduction mill at its mines near Pachuca and construct a pipe line 3 miles long to transport its slimes.

The Almoloya Mining Company will install considerable new machinery at its mines at Ameca, State of Jalisco, Mexico.

THE MACHINERY MARKETS

The Pacific Coast

PORTLAND, ORE., November 11, 1910.

One of the principal features of the present demand is the increase in orders for gasoline engines to be used for a great variety of service. Most of the standard types manufactured in the East are represented here by sales agencies, and the plants that have been established on the coast for the manufacture of such units all appear to be doing well. Further developments along this line may be looked for throughout the year.

In connection with the above there may also be noted a steadily growing volume of inquiries for agricultural machinery, steam or gasoline tractors, auto trucks and wagons, &c., together with repair outfits for small shops located in the midst of farming communities.

Hydroelectric enterprises continue to occupy the attention of commercial interests all along the coast, and many plans for industrial plants, especially in the various lines of woodworking, are dependent upon the success of these enterprises.

The Washington Water & Power Company, Spokane, Wash., is preparing to build another large generating plant on a new power site recently secured on the Spokane River.

The Twin City Light & Traction Company, Chehalis, Wash., which is now operating an electric station of about 400 kw., equipped principally with generating units supplied by the Allis-Chalmers Company, 115 Jackson street, Seattle, is working out plans for a new power plant of much larger capacity.

The erection of a sawmill at Wauna, Ore., followed by other woodworking plants, is contemplated by the O. K. Logging Company, Marshfield, Ore., whose main office is in Portland.

The plant of the Haines Electric Power Company, Forest Grove, Ore., which is equipped with hydroelectric and engine driven units aggregating 300 kw. capacity, has been purchased by A. Welch of Portland, Ore., and will be enlarged in the near future, a 25-year franchise for municipal service having been granted by the city.

The Portland Railway, Light & Power Company, Portland, Ore., is negotiating for a 10-acre tract, on which it is proposed to erect new car shops of large capacity equipped with a full line of motor driven machinery.

The Mountain Timber Company, Kalama, Wash., has put in service a heavy Heisler locomotive, purchased from the W. O. Haines Supply Company, Portland, Ore.

The Spokane Chemical & Brick Company, Spokane, Wash., is preparing plans for the erection of a new factory building. Trucks or cars for handling material and a concrete mixing machine will be purchased.

The Northwest

ST. PAUL, MINN., November 14, 1910.

In the general industrial field there is a fair amount of buying for shop, mill and factory equipment, although business in that line is not yet what it ought to be for this season of the year. It is doubtful whether there will be much improvement before the opening of another spring.

A bond issue has been authorized at Morristown, S. D., to provide funds for the construction of a municipal water works system.

Bradley, S. D., will take new bids on the construction and equipment of a water works system.

It is probable that the hydroelectric plant of the Grangeville Electric Light & Power Company, Grangeville, Idaho, which is equipped with an Allis-Chalmers generator of 200 kw., driven by a water turbine of the S. Morgan Smith Company's design, will be enlarged, as the requirements of the service are rapidly increasing.

A one-story boiler house 50 x 70 ft. and a three-story generating plant with 200-ft. stack are to be added to the plant of the Minneapolis Gas Light Company, Minneapolis, Minn.

It is proposed to purchase a new boiler and pumping engine for municipal service at Huron, S. D., the additional capacity required being about 2,000,000 gal. per 24 hours. A steel stack, elevated steel tank of large size, settling basins, &c., may also be purchased.

Contracts recently awarded for the construction of water works at Rochester, Minn., include a steel tower and tank of 100,000 gal. capacity, to be furnished by the Chicago Bridge & Iron Works, Chicago, Ill.

The Diamond Boiler Works, Minneapolis, Minn., in addition to its standard line of boilers and tanks, has taken a liberal number of orders this season for refuse burners, conveyors, smoke stacks, breechings, &c.

An elevated steel tank or standpipe will be included in plans for the municipal water works system at Highmore, S. D.

The Sioux Falls Light & Power Company, Sioux Falls, S. D., is installing a 400-hp. Heine boiler and an 800-kw. Allis-Chalmers steam turbine. The company has under consideration the erection of a new steam plant, but the matter has been postponed for the present.

Milwaukee

MILWAUKEE, WIS., November 14, 1910.

Local buying is not very heavy, but salesmen from the various machinery houses have a good many prospects in hand. Some of the new construction scheduled for this fall has been put off until spring. This condition applies more particularly to Milwaukee and other large industrial centers of the State. In the smaller cities the prevailing dullness does not seem to be so much felt. Many mill and factory extensions of moderate size are now in progress, which, with the usual percentage of buying for replacements or improvements in operating machinery, result in a fairly constant stream of inquiries from the northern and interior districts of the State. The larger manufacturing companies have orders in the shops sufficient to keep them going for some time.

A three-story and basement addition, 50 x 105 ft., is to be made to the manufacturing plant of the Milwaukee Chair Company, Milwaukee. Contracts are now being placed.

A 15-kw. belted dynamo will be purchased by the School Board of Beloit, Wis., to supply electric current for use in the manual training shop connected with the High School.

Work is now in progress on a two-story machine shop for the Smalley Mfg. Company, Manitowoc, Wis. An additional factory building is to be erected after the first of the year.

New boilers may be purchased in the near future for the city pumping station at Waukesha, Wis.

Construction contracts are to be let this month on the new one-story plant of Jos. Obenberger & Sons Company, Milwaukee.

Work has been started on a two-story factory, 175 x 200 ft., at Richland Center, Wis., for the Pacific Coast Condensed Milk Company. Machinery has been contracted for. Nine other plants are to be built in this State, the next one probably at Sheboygan Falls.

Kirchoff & Rose, Milwaukee, are taking bids on a two-story shop, 60 x 120 ft., for the Northern Machine Company.

Plans are under way at Neillsville, Wis., for rebuilding the plant of the Reliable Furniture Mfg. Company, which was burned last summer.

Among the contracts recently taken by the Worden-Allen Company, Milwaukee, is one for the erection of a new building for the Hubbard Steel Foundry, East Chicago, Ill.

The Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis., will contract for additional substation apparatus, including transformers and a rotary converter.

Construction contracts are now being let for a new foundry addition at the plant of the Rundle Mfg. Company, Milwaukee, which will be 84 x 130 ft.

The capacity of the concentrating plant operated by the Peaceful Valley Mining Company, Platteville, Wis., is being increased to 100 tons.

It is proposed at Tomah, Wis., to expend $4000 in the improvement and extension of the water works system.

A large expenditure is to be made by the Berwind Fuel Company in improving its docks at Superior, Wis. Contracts for additional construction work and some of the unloading machinery have been let.

The American Seating Company, Racine, Wis., has recently completed a new power plant building 45 x 60 ft., which is equipped with three 150-hp. horizontal tubular boilers furnished by the Freeman Mfg. Company of Racine. Other improvements under consideration are being held up until spring.

Farther Central West

OMAHA, NEB., November 14, 1910.

Reports on the market for machinery, mechanical and electrical supplies continue favorable, with a firm undertone and general adherence by manufacturers and dealers to established prices. In the various States of this section quite a number of new companies were incorporated during

THE MACHINERY MARKETS

the past month, and a fair percentage of these will establish new shops. From the mining districts inquiries for new equipment are slackening, for the reason that the bulk of this was ordered earlier in the fall, but there is already talk of extensions in the spring, and the leading manufacturers of power and mining machinery, including compressors, drilling outfits, hoists, &c., will be almost continuously busy between now and that time figuring on pending lists.

Plans are now in progress for remodeling the plant of the Des Moines Electric Company, Des Moines, Iowa, and installing additional power machinery. Work is not likely to be started before spring.

Bids are now being taken at Marshalltown, Iowa, on machinery for a hydroelectric plant to be operated by the municipality.

Contracts recently taken by the Des Moines Bridge & Iron Company, Des Moines, Iowa, include a steel tower and tank of 50,000 gals. capacity, to be erected in connection with the new water works system at Mulvane, Kan.

Plans for improvements in the water works system at Boone, Iowa, are now being prepared for the city, including the installation of three new pumping units aggregating 7,000,000 gal. capacity, three boilers of 150 hp. each, with auxiliary apparatus and valves, hydrants, &c.

An all-steel vehicle with roller bearings for use in hauling lumber and similar material is being put on the market by the Davenport Wagon Company, Davenport, Iowa.

The city of Nephi, Utah, will install in its new power and lighting plant a hydroelectric unit, consisting of a General Electric generator of 150 kw., driven from a water turbine, built in the shops of the S. Morgan Smith Company, York, Pa.

Contracts have been placed at O'Neill, Neb., for the erection of an electric plant to serve the community.

John Westover, Inc., with structural steel works at 920 U street, Lincoln, Neb., is about to let contracts for a foundry and other buildings.

The new silo manufacturing plant to be erected at Des Moines, Iowa, by the Farmers' Co-operative Company, will include a shop, 60 x 200 ft., and an electric power plant. All of the machinery is to be motor driven.

The Field Automobile Company, 245 North Ninth street, Lincoln, Neb., is planning the erection of a two-story factory, 50 x 150 ft. W. T. Field, manager of the company, will be in charge of the work.

The Hawkeye Pump Company, Fairfield, Iowa, has under construction a new factory building, 40 x 150 ft., two stories, of concrete, brick and steel construction, which is expected to be completed by January 1. The building will be equipped with machinery for the manufacture of steel pumps, tanks, troughs and sheet metal specialties.

The Waterloo Commercial Club and Board of Trade, Waterloo, Iowa, has closed with the McElroy Concrete Post Company for the removal of its plant to Waterloo. In addition to the manufacture of cement posts the company also makes molds for the latter.

North Texas

DALLAS, November 12, 1910.

All indications are that by the first of the year there will be many large buildings in course of erection in various cities of this section of north Texas. In nearly every instance these structures are to be of steel. Dealers in all kinds of heavy machinery report a good demand. In the past few weeks the Dallas Chamber of Commerce has received communications from manufacturers in various parts of the country inquiring about locating their plants in Dallas. One reason is that the census figures so far given out show that Texas has had a wonderful increase in population.

The Lone Star Iron Works of Dallas, Texas, has recently been incorporated, with capital stock of $100,000, by B. Kinsell, J. H. Leiber, W. S. Myers and others. The company is to engage in the manufacture of structural iron of all kinds and do a general foundry business. Promoters of the enterprise claim that they have enough work in view to keep the foundry going for months.

Bids for installing a steam heating system in the court house at Hillsboro, Hill County, Texas, are asked by the Commissioners' Court of that county.

Bids will be received until November 17 for the erection of three concrete and reinforced steel buildings for the Texas University at Fort Worth.

A permit to do business in Texas has been granted the Phoenix Iron & Steel Company of Birmingham, Ala. The principal Texas office is to be located at Galveston, Texas.

The cotton gin of McKinney & Morris, Van Alstyne, Texas, was burned October 27. Loss on the buildings, $10,000.

The machine shop of W. C. Forsythe, McKinney, Texas, was burned October 25, causing a loss of $10,000.

At a fire which took place October 31 in the flour mill owned by Paul Garritt, San Angelo, Texas, the entire plant, with the exception of the engine house, was destroyed. The loss was approximately $30,000. The building and stock was insured for $19,000.

The cotton gin belonging to R. E. Brown, Rosenthal, Texas, was destroyed by fire October 29, entailing a loss of about $5000.

Government Purchases

WASHINGTON, D. C., November 14, 1910.

The Paymaster-General, Navy Department, Washington, will open bids November 22, under schedule 3013, for two electric driven compound geared deck winches and controllers, and on November 29, under schedule 3051, for two turbine generator sets and two motor generator sets.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids November 29, under schedule 3051, for furnishing and installing two generator sets at Newport, R. I., and December 13, under schedule 3052, for one 30-in. planing machine for Mare Island, Cal.

R. C. Hollyday, chief of Bureau of Yards and Docks, Navy Department, Washington, will open bids December 3 for coal and ash handling apparatus for the central power station, United States Navy Yard, Norfolk, Va.

The Isthmian Canal Commission, circular 511 B, calls for bids to be opened November 25 for furnishing, under circular 611 B, one Scotch marine boiler and 100 20-in. car wheels.

Bids were opened by the Isthmian Canal Commission, Washington, November 4, for furnishing two hoisting engines, three-drum, under C. Z. 4802 A, as follows:

American Hoist & Derrick Company, St. Paul, Minn., $7221.20 and $6540; Lenher Engineering Company, New York, $4126 or $4276; Lidgerwood Mfg. Company, New York, $5752; Meade-Morrison Mfg. Company, New York, $6190; Motley, Green & Co., New York, $4815; Stroudsburg Engine Works, Stroudsburg, Pa., $5200; Vermilye & Power, New York, $5050; Williamson Brothers Company, Philadelphia, Pa., $5476; J. F. Fennell, New Y., $2693 and $2619.50.

Bids were opened November 2 by the purchasing officer, Isthmian Canal Commission, Washington, for furnishing one bench grinder for 12-in. emery wheel, as follows:

Baldwin, Tuthill & Bolton, Grand Rapids, Mich., $37.75 and $42.50; J. P. Kemp, Baltimore, Md., $39.40; Manning, Maxwell & Moore, New York, $30; Vermilye & Power, New York, $19 or $30.25.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids November 8, as follows:

Class 1, one motor driven disk grinder—Bidder 9, Charles H. Besly & Co., Chicago, Ill., $826; 54, Frevert Machinery Company, New York, $781; 63, Henshaw, Bulkley & Co., San Francisco, Cal., $1219; 64, Harron, Ricard & McCone, San Francisco, Cal., $832.50; 83, J. P. Kemp, Baltimore, Md., $741.80; 106, Manning, Maxwell & Moore, New York, $1221; 118, Pacific Tool & Supply Company, San Francisco, Cal., $819; 126, Ransom Mfg. Company, Oshkosh, Wis., $900.

Class 61, four vertical simplex piston steam pumps—Bidder 11, Blake & Knowles Steam Pump Works, New York, $1337 and $1772; 41, M. T. Davidson Company, Brooklyn, N. Y., $1565; 47, Drew Machinery Agency, Manchester, N. H., $1945; 150, Vermilye & Power, New York, $1335; 153, Warren Steam Pump Company, New York, $1325.

Class 81, six complete sets of propelling machinery for motor dories—Bidder 29, Camden Anchor Rockland Company, Camden, Maine, $165; 48, Eagle Company, Newark, N. J., 140; 51, Fairbanks Company, Washington, D. C., $131; 52, Ferro Machine & Foundry Company, Cleveland, Ohio, $175; 71, Arthur P. Homer, Boston, Mass., $149.50; 90, Lackawanna Mfg. Company, Newburgh, N. Y., $225.04.

Class 95, two constant speed motors—Bidder 57, General Electric Company, Schenectady, N. Y., $144; 105, Montgomery & Co., New York, $145.80; 152, Wagner Electric Mfg. Company, St. Louis, Mo., $136.

Class 96, seven transformers—Bidder 2, Allis-Chalmers Company, Milwaukee, Wis., $88.75; 33, Crocker-Wheeler Company, Ampere, N. J., $91.65; 42, Duncan Electric Mfg. Company, Lafayette, Ind., $80; 92, Colonial Electric Company, St. Louis, Mo., $90; 105, Montgomery & Co., New York, $82.04; 108, National Electric Supply Company, Washington, D. C., $77.50; 124, Rumsey Electric Company, Philadelphia, Pa., $88; 152, Wagner Electric Mfg. Company, St. Louis, Mo., $83.60.

Passenger Rates in Europe and America

The *Official Railway Guide* for November presents an interesting array of figures regarding the cost of railroad transportation in Europe and North America, taken from notes made by a not inexperienced traveler, of amounts actually paid during a recent tour of several thousand miles on the European continent, in passing through countries having a total population of about 130,000,000 people and traveling between 16 cities with an aggregate population of about 9,000,000. A large number of the railroads used are owned and operated by the respective governments.

In the journeyings in North America with which a comparison is made the country traversed has a population of about 50,000,000, and the routes are between 16 cities having an aggregate population of a little less than 10,000,000. These figures are taken in both cases from the former, not the recent, census, as the complete statements of the latter are not as yet accessible. The figures for 1910 will doubtless show a large increase in both aggregates. Many of the European cities have made phenomenal growths in the past ten years, while our own cities have not stood still.

The territory covered in Europe was within a square of about 600 miles by 900 miles, and is therefore about equal to that part of the United States north of the Ohio River and between the Atlantic coast and the Mississippi River.

The comparison is made between the fares charged for tickets on each continent, such as an ordinary passenger purchases in traveling from place to place. In no instance was a "train de luxe" included.

Taking the figures as shown in the tabulated statements, the cost of railroad traveling in Europe is over 55 per cent. higher than in North America. To state the matter differently: A passenger with a trunk in Europe would travel first-class 500 miles in 16 hours and 27 minutes at a cost of $22.25; while a passenger in North America with the same baggage would travel in a parlor car 500 miles in 12 hours and 56 minutes at a cost of $14.30.

The figures given all show that under equal conditions the ordinary passenger fares in North America are considerably cheaper than in Europe, notwithstanding the much greater density of population in the countries of the latter. Judging from these figures, says the *Railway Guide*, the American people have no just cause of complaint of the cost of traveling by rail in this country.

The National Monetary Commission.—The National Monetary Commission has been holding sessions in New York the past week, Senator Aldrich presiding. The Academy of Political Science in the city of New York, which began its annual meeting Friday, November 11, at Columbia University, entertained members of the commission at its anniversary dinner Friday evening. A. Barton Hepburn presided. Addresses were made by Senator Aldrich, A. Piatt Andrew, Assistant Secretary of the Treasury, and others. Senator Aldrich said that the commission has completed one stage of its work, and after years of investigation of the financial and banking systems of the Old World can now turn to the bankers and economists of this country for aid in fashioning a banking system that will meet every need for years to come. The commission has no plan. He considered the character of bank note issues and the manner in which they shall be issued to be a matter second in importance to the question of the reorganization of the credit and banking systems of the country.

The Edgewater Iron Company's blast furnace at Lebanon, Pa., formerly known as the Lebanon Valley Furnace, is to be sold.

Savings Bank Life Insurance in Massachusetts

Harry W. Kimball, 161 Devonshire street, Boston, field secretary of the Massachusetts Savings Insurance League, states that the growth of the movement is evidenced by the fact that at the present time there is about $1,400,000 of insurance in force, and the following figures recently issued by the banks make vivid the growth of the movement during the last year:

A report issued by the Insurance Department of the People's Savings Bank of Brockton covering receipts for the month of October, 1910, shows that during that month there was received from the policy-holders as premiums $2,900.40 as against $2,075.12 for the month of October, 1909, a gain of 42 per cent. The report of the Insurance Department of the Whitman Savings Bank shows premium receipts in October, 1910, of $3,456.59 as against $1,975.46 for October, 1909, a gain of more than 74 per cent.

With the insurance departments in the above-named banks succeeding so well, other savings banks of the State have appointed committees to consider the advisability of establishing insurance departments, and the Massachusetts Savings Insurance League, with rare farsightedness, is aiming at the education of the next generation by conducting an active campaign in instructing the students of the high schools of the commonwealth in the principle and methods of savings bank life insurance.

One unique provision of the Massachusetts law is that agencies may be established in mills and factories so that policyholders can easily pay their premiums at the office of the company for which they work. Under this plan more than 80 agencies have been arranged for in the leading manufacturing plants of the State. In this work the local trades unions have been of great assistance. In some instances where employers have been reluctant to establish an agency, the union of that locality has requested that an agency be established for the benefit of the men, and in such cases this request has been acceded to. The law is also broad enough to permit local trades unions to become agencies for the insuring banks, and the unions of the State are beginning to awaken to the opportunity thus afforded to them to be of larger assistance to their own members.

Sixty Years' Service With One Company.—Thomas Ogram recently celebrated the completion of 60 years' continuous service with William Sellers & Co., Inc., Philadelphia. He entered the service of the company as an apprentice in 1850, when 18 years of age, and has since served successively as journeyman machinist, foreman and instructor, and latterly as instructor of apprentices. The completion of his 60 years was fittingly observed by a reception, at which the men in the shops and the officers of the company, some of whom had been connected with the company 50 years, greeted Mr. Ogram and presented him with an engraved album testimonial signed by the officers and staff, and by former officers. One of Mr. Ogram's sons, Wm. B. Ogram, is district manager of sales, of the American Bridge Company for Western and Central New York and Northwestern Pennsylvania, with headquarters at Buffalo.

ABC exhaust fans, made by the American Blower Company, Detroit, Mich., are being used for elevating seed cotton on the estate of the Czar of Russia, his plantation being entitled the Imperial Mourgab Estate at Bairam-Ali, Turkestan, Russia. On this same plantation is used a complete ginning outfit manufactured by the Murray Company, Dallas, Texas.

The William B. Pollock Company, Youngstown, Ohio, has recently issued its supplement No. 20, giving views of the new C furnace of the Youngstown Sheet & Tube Company, Youngstown, Ohio, which it built.

Personal

Hugo Wachenfeld of the iron and steel firm of L. Possehl & Co., Lübeck, Germany, is in this country for a stay of several months. He will visit various iron and steel works, including foundries, in the United States and Canada.

Herbert R. Culp has been elected secretary and treasurer of the Screw Cutting Company of America, Philadelphia, Pa., succeeding E. W. Crellin, resigned.

C. V. Erdman, who has been manager of the tin plate plant of the American Sheet & Tin Plate Company at Cleveland, Ohio, has resigned, to become manager of the tin plate plant of the Phillips Sheet & Tin Plate Company at Clarksburg, W. Va., succeeding E. L. Cronemeyer, who has been appointed assistant manager of the Weir plant of the latter company, at Weirtown, W. Va. These changes became effective November 1.

Kenneth Seaver has been appointed chief engineer of the Harbison-Walker Refractories Company, Farmers' Bank Building, Pittsburgh, Pa.

H. H. Bender has been appointed manager of the Cincinnati, Ohio, office of Francis J. Peck & Co., metallurgists and engineers, Cleveland, Ohio, and has opened an office in the Mercantile Library Building.

E. Plough of the Aluminum Company of America, Pittsburgh, read a paper on Thursday evening, November 17, before the Pittsburgh section of the American Engineers' Society on the subject of "Analysis and Uses of Aluminum."

James A. Campbell, president of the Youngstown Sheet & Tube Company, Youngstown, Ohio, has returned from a two months' trip in Europe.

Obituary

CHARLES H. TUCKER, secretary and treasurer of A. Leschen & Sons Rope Company, St. Louis, Mo., died October 30.

WILLIAM C. JOY, a pioneer manufacturer of steam radiators, died in New York City November 11, aged 77. He was president of the Joy Radiator Company, Titusville, Pa., one of the companies merged in the American Radiator Company.

AUSTIN K. WHEELOCK, Boston, Mass., vice-president of the Firth-Sterling Steel Company and well known in the Eastern steel trade, died suddenly of heart disease at Washington, D. C., November 9. He was the senior partner of Wheelock, Lovejoy & Co., Boston and New York, and for nearly 4 years had been connected with the steel trade. He was an important importer of Swedish iron, but his largest interest was in connection with the manufacture of high grade tool steel and steel for ordnance. He was about 60 years of age.

LEWIS GREGORY, formerly treasurer of the Carpenter Steel Company, died November 12 at his home in New York City, aged 51 years. He was made treasurer of the Carpenter Steel Company in 1893. In 1903 he retired from business.

The Moose Mountain Mining Company has completed arrangements for installing at its iron ore concentrating works at Sellwood, Ontario, a supplemental concentrating plant to be operated by the Grondal process.

The Wolverhampton Corrugated Iron Company, Ltd., of Ellesmere Port, Cheshire, Eng., has recently contracted with Geo. J. Hagan, furnace engineer and contractor, Pittsburgh, for 14 annealing furnaces to be used in the box annealing of steel sheets.

Pittsburgh Steel Company Preferred Stock

In connection with the proposal of the Pittsburgh Steel Company to build two or more blast furnaces as referred to in *The Iron Age* of November 10, the new financing arranged for this week is of interest. The company has sold to Speyer & Co., New York, $7,000,000 of 7 per cent. cumulative preferred stock. The $3,750,000 of bonds now outstanding will be retired January 1, 1911. The capital stock of the company has been $6,000,000. Besides issuing the $7,000,000 of new preferred stock the company has increased the common stock to $7,000,000, the additional $1,000,000 of common stock being subscribed by the present owners of the property. The preferred stock will be a first charge on the company's net earnings, which, it is stated, have averaged in the last five years $1,400,000. The common stock has paid 8 per cent. for the last six years. The board of directors, which will be increased to nine, will include William H. Nichols, chairman of the General Chemical Company of New York; William A. Nash, president of the Corn Exchange Bank of New York, and Henry Ruhlender of Speyer & Co. Application is to be made to have the new preferred stock listed on the New York Stock Exchange. A considerable amount of it has been placed with investors and institutions both in this country and in Europe.

Opening of the American Museum of Safety

As a clearing house for every worthy device and every worthy thought for the safety of human life the American Museum of Safety has established a permanent safety exposition in the Engineering Societies' building, 29 West Thirty-ninth street, New York City. Here will be shown means for protecting operatives from injuries from machines or dangerous processes. Actual machines, models and photographs will demonstrate simple practicable safeguards adapted to the needs of employers for protecting the lives and limbs of their workmen in connection with motors, elevators, steam boilers, explosives, fire, collapses of scaffolding or buildings, falls from ladders, stairways, &c., transportation of all kinds and the use of tools.

At the exercises in connection with the formal opening of the new museum two gold medals offered by the Travelers Insurance Co. and the *Scientific American* to the individual industrialist or corporation that has done the most for the safe-guarding of its machines and processes and for the best safety device exhibited at the Museum, respectively, will be awarded by the trustees of the Museum, November 21, at the Engineering Societies' Building.

Among the exhibits already received are a series showing the work of the factory safety engineer and safety committees, another idea of the new thought in conserving human life, by establishing in the up-to-date plant an official whose sole work is the promotion of safety.

The Youngstown Iron & Steel Roofing Company, Youngstown, Ohio, has changed its firm name to the Youngstown Iron & Steel Company. This was done for the reason that its line of products is varied, consisting of black and galvanized iron and steel sheets, roofing and other products. The company has recently made some large additions to its plant.

The Phillips Sheet & Tin Plate Company, Weirton, W. Va., has established a district sales office in room No. 1013, New York Life Building, LaSalle and Monroe Streets, Chicago, under the management of J. J. Watson, who has been transferred from the general sales offices at Weirton.

Refunds to Shippers

The Status of Claims Based on the Missouri River and Denver Decisions

Traffic experts advise that claims for refunds should be filed promptly with the Interstate Commerce Commission on all shipments from Eastern territory during the past two years that are involved in the Missouri River rate case. The two-year limitation in the Hepburn law has already begun to run against these claims, and shippers who are entitled to refunds have no standing before the Commission to recover overcharges of this character unless their claims are filed within two years. It is estimated that the railroads will be obliged to refund many millions of dollars in order to comply with the decisions of the Interstate Commerce Commission which were sustained recently by the United States Supreme Court in the Missouri River and Denver cases.

The Missouri River Case

Two years ago the Interstate Commerce Commission decided, on complaints filed by Kansas City jobbers, that class rates from Atlantic seaboard territory to the Missouri River were unreasonable and ordered a reduction to become effective November 10, 1908. The railroads appealed to the United States Circuit Court, which sustained an injunction against the Commission and authorized the railroads to continue collecting the rates that had been in effect for many years. The United States Supreme Court has recently reversed the Circuit Court and upheld the power of the Interstate Commerce Commission, thus legalizing the reduced rates which the Commission had ordered in its original decision. This will make it necessary for the railroads to refund to shippers the money that has been collected during the past two years on the traffic involved, in excess of the rates which the Commission prescribed as just as reasonable.

The order of the Commission in the Missouri River case applied only to shipments originating in "Atlantic seaboard territory." This may be roughly defined as territory east of the corporate limits of Buffalo and Pittsburgh. It affects all shipments from this Eastern territory to points on the Missouri River, or to points beyond which take rates that are based upon the Missouri River. The specific reduction ordered was in the proportional rates between the Mississippi and Missouri rivers, which form a part of the through rates on this traffic. The reduction was 9 cents on first class, 7 cents on second class, 5 cents on third class, 4 cents on fourth class and 3 cents on fifth class. This reduction must now be made effective on all traffic that moved during the past two years, to shippers who file their claims for reparation in the usual manner before the Interstate Commerce Commission.

The Time Limitation on Refund Claims

A vast number of confusing questions have arisen in connection with this and the Denver case. One of the unsettled problems is as to the time when claims will become "outlawed" or barred by the limitation in the Hepburn law. The courts have never passed upon this particular question and the rulings of the Commission are somewhat confusing. In ordinary reparation cases, where a shipper asks for a refund of an excessive charge, the Commission has ruled that the claim must be filed within two years from the date of the expense bill, or delivery of the shipment. In another class of cases, however, in determining what rates should apply on any specific shipment, the Commission has generally held that the date of the shipment or delivery to the initial line is the controlling factor. In the Missouri River case the reduction ordered by the Commission was in the rate between the Mississippi and Missouri rivers. A shipment moving from the East would not be affected by the change until it reached the Mississippi, and it may eventually be held that the day when a particular shipment crossed the Mississippi River would be the date from which the two-year limitation would run. Owing to the fact that not many shippers filed their claims in this particular case within two years from November 10, 1908, this confusion may eventually be resolved by the courts before the Missouri River case is finally settled.

The Denver rate case was finally disposed of by the United States Supreme Court at the same time as the Missouri River case, but the effective date of the original order by the Commission in the Denver case was July 1, 1909, so there will be ample time for all claims to be filed with the Commission before the two-year limitation begins to run. In the Denver case the Commission ordered reductions in the rates from Chicago to Denver as follows: First class, 25 cents; second, 20 cents; third, 15 cents; fourth, 12 cents; fifth, 10 cents; A, 11½ cents; B, 9 cents; C, 8 cents; D, 5½ cents; E, 6 cents. From St. Louis the reductions ordered on these respective classes were: 23, 18, 14, 11½, 9, 10½, 8½, 7, 6½, and 5 cents.

The Complications Involved

Traffic experts assert that more confusion has grown out of these cases than has ever been known in the world of freight rates. In the Denver case, for example, the specific order of the Commission applies only on shipments from Chicago and St. Louis but includes all traffic from the East to Denver points which pass through the two cities named. A large amount of traffic from the East moves through Hannibal and other crossings of the Mississippi River without passing through Chicago or St. Louis, and the Commission or the courts will undoubtedly be called upon to determine whether the reduction should be allowed on all such traffic. Similar questions will arise on shipments from Milwaukee and other points whose rates to Denver are based upon Chicago or St. Louis, while the traffic does not actually move through either of those cities.

Both of these great cases will be fruitful of litigation during the next 5 or 10 years, as they involve more questions of law than any other cases that have ever come before the Interstate Commerce Commission. An interesting example of this is in the rates from Johnstown and Pittsburgh to Kansas City. Johnstown is in seaboard territory, and is entitled to the reduction which the commission ordered in the rate between the Mississippi and Missouri rivers. Shipments from Johnstown passing through Pittsburgh are subject to a lower rate than shipments from Pittsburgh, and the commission has therefore placed itself in the position of issuing an order, sustained by the United States Supreme Court, which violates the principle of the long and short haul clause of the law. The question may arise whether Pittsburgh is not entitled to a corresponding reduction, as well as other cities which take Pittsburgh rates to the Missouri River on iron and steel. If claims are filed by shippers who can show that the commission has discriminated against them, this in itself will raise a new problem in rate making, which may call for extended litigation.

Procedure for Shippers Having Claims

To protect their rights it will be necessary for shippers to file formal reparation claims, in the manner prescribed by the commission for such claims. A separate claim must be filed against each road which has participated in the overcharge, making the claim that the rate collected was unjust and unreasonable. Where the shipper cannot determine the intermediate lines which participated in the movement, it may be sufficient to make the claim against the delivering road which issued the expense bill. The commission

has advised that a statement be prepared to accompany each claim, showing the date of each shipment, the route, the weight, the amount of freight charged and the amount of overcharge which the complainant seeks to recover. The paid expense bill will ultimately be required as proof of the claim on each shipment, but it is understood that the filing of a claim need not be delayed until expense bills can be collected. In some cases the expense bills are in the possession of the consignees, who paid the freight as a part of their business expense, and will be entitled legally to the money refunded by the carriers. In many cases, however, goods are sold delivered, and expense bills are sent in as so much cash by the consignee, in making his settlement with the Eastern manufacturer or shipper from whom he purchased the goods. The possession of the expense bill usually identifies the party who is entitled to the refund, and for this reason the paid freight bills are generally required as proof of a claim.

Riverside Gas Engine Installations.—The Riverside Engine Company, Oil City, Pa., builder of gas engines of from 60 to 600 hp., is well supplied with orders. Recent installations made by the company include three double-acting tandem units of 160 hp. each, direct connected to 100-kw. alternating generators for the Standard Oil Cloth Company, Peekskill, N. Y. The engines are designed to operate in parallel, and each is fitted with a synchronizing device by which the speed of the engine can be raised or lowered 10 revolutions to bring it into synchronism with one or more engines working in parallel. Another installation is four 200-hp. units, equipped with vacuum cylinders and air compressor cylinders, with piston rod coupling for the Owens Bottler Works, Owens, W. Va. The vacuum cylinders are operated to draw glass into molds and the compressed air for blowing in shape to form bottles. An order has been received for two 100-hp. engines to operate pumps for the Dempseytown Gas Company. These engines will pump 2,000,000 ft. of gas daily through a 6-in. line, a distance of 6 miles to the Independent Piping Company on Oil Creek. The company is building two gas engine driven compressors for the Hazel-Atlas Glass Company of Wheeling, W. Va., for installation at its Washington, Pa., plant. One of the compressors will have a capacity of 700 and the other 1500 cu. ft. per minute. Two 75-hp. engines, to be operated on producer gas, are being installed at the Philadelphia House of Reform, Wawa, Pa. They will be direct connected to generators, and will operate at 300 rev. per min.

The Pittsburgh Foundrymen's Association.—The monthly meeting of the Pittsburgh Foundrymen's Association was held in the Fort Pitt Hotel, Pittsburgh, on the evening of November 7. J. A. Gearhart, Gulick-Henderson Company, Pittsburgh, read a paper on "The Inspection of Castings" from the inspector's standpoint. Several inspectors from other testing laboratories were present to participate in the discussion which followed.

The latest publication concerning the working forces in the various Krupp plants shows that on July 1 the firm employed 68,726 officials, clerks, and workmen; that 37,761 were employed in the steel foundry and the gun-testing grounds alone. The coal and coke consumption for the year amounted to 2,491,406 tons. The number of steam engines in use was 569, developing 89,430 hp.

The Antrim Iron Company, Mancelona, Mich., is relining its furnace and making other repairs.

National Founders' Association

(*Special Telegram.*)

CHICAGO, November 16, 1910.—The fourteenth annual convention of the National Founders' Association is now in session at the Hotel La Salle, in this city. The attendance promises to be the largest in the history of the association. The Administrative Council held a meeting yesterday, as usual, preliminary to the annual convention. It was followed last evening by the regular "alumni" dinner for the members of the council, at which Henry A. Carpenter was toastmaster. The number present was 35, establishing a record for this function.

The programme for the convention, which will close Thursday afternoon, provides for a report of the committee of investigation of the liability of employers for industrial accidents, followed by a discussion by members of the Minnesota and Illinois state commissions, also discussions on National trade schools and industrial education.

The speakers at the banquet this evening are to be Dr. Cyrus Northrup, president of the University of Minnesota, Hon. Frederick C. Stevens, St. Paul, and Hon. Frank M. Nye, Minneapolis. The officers' report is not yet available.

At Pittsburgh last week 15 officials and directors of the Imperial Glass Company pleaded *nolo contendere* before Judge Young in the United States District Court for violation of the Sherman Anti-Trust act, and each was fined $500. At the same time a fine of $2500 was imposed upon the Imperial Glass Company itself, with costs.

It has been officially announced that the Horton chucks, as made by the E. Horton & Son Company, Windsor Locks, Conn., have been awarded a gold medal at the Brussels Exposition. This is said to be the highest award ever given for chucks and, next to the "grand prix," is the highest possible award for anything.

The George M. Newhall Engineering Company, 136 South Fourth street, Philadelphia, Pa., announces that it will follow the example set by the steel rail manufacturers in quoting prices for new steel rails per pound instead of per ton, and its prices for relaying rails will hereafter be based on the pound or 100 pounds.

On November 7 the district sales offices of the American Sheet & Tin Plate Company were removed to the thirteenth floor of the Hudson Terminal Building, 30 Church street, New York. Theodore A. Gessler is manager of sales for the company in the New York district.

McClure & Spahr, architects of Pittsburgh, are preparing plans for the new office building of the Republic Iron & Steel Company, to be erected at Youngstown, Ohio, and which is expected to be completed about July 1, next year.

The Chicago, Milwaukee & Saint Paul Railroad is installing solid steel sleeping cars on trains out of Chicago. These cars are of the latest design and contain all of the modern improvements such as longer and wider berths.

Receipts of ore at Ashtabula Harbor, Ashtabula, Ohio, for October were 1,176,363 tons. The total for the season at that port up to October 31, was 8,895,958 tons, being 2,000,000 tons more than last year at the same time.

Trade Publications

Brick Making Machinery.—Chicago Brick Machinery Company, 77 Jackson Boulevard, Chicago, Ill. Booklet. Illustrates and describes the Elwood brick press, the special feature of which is the ease with which the molds may be changed. This machine is intended for a universal press for all brick making material and any shape of brick which it is practicable and economical to make on a power press.

Water Meters.—Thomson Meter Company, 100 Bridge street, Brooklyn, N. Y. Illustrated pamphlet. Devoted to the Lambert water meter, which is built in sizes ranging from ⅝ in. to 6 in., of bronze composition metal throughout. Space is given to various accessories and a list of repair parts and a brief table of specifications complete the pamphlet.

Regenerative Flaming Arc Lamps.—Adams-Bagnall Electric Company, Cleveland, Ohio. Form No. 141. Deals with the illumination of foundries and factories by the A-B regenerative arc lamp. An illustrated description of this lamp appeared in *The Iron Age* October 7, 1909.

Worm Gears.—Morse, Williams & Co., Inc., Twelfth and Samson streets, Philadelphia, Pa. Catalogue No. 4. Size 7 x 9 in.; pages 110. Illustrated. Refers to the Hindley worm gears and spirals. A brief description is given of the worm gear and its advantages over the ordinary straight type, followed by a number of dimension tables for gears having leads varying from 0.2068 to 9.4248 in. and a description of the spiral gears, with tables.

Motor Driven Ice Cream Freezers.—S. E. Whitney, 65 Sudbury street, Boston, Mass. Folder. Lists a number of different types of ice cream freezers for operation by direct connected electric motors.

Pile Drivers and Unloading Plows.—The Bucyrus Company, South Milwaukee, Wis. Two pamphlets. The first is concerned with a type of locomotive self-propelling pile driver, an illustrated description of which appeared in *The Iron Age*, December 23, 1909. The unloading plows described in the other pamphlet are designed for railroad companies and contractors for handling blasted rock, gravel and clay.

Brass Goods.—Milwaukee Brass Mfg. Company, Lapham and Barclay streets, Milwaukee, Wis. Catalogue C. Shows an extensive line of plumbers' brass goods. Each of the 269 pages has an illustration of some one part of the line and prices of the various sizes are given under the engraving.

Steam Engines.—Providence Engineering Works, 521 South Main street, Providence, R. I. Bulletin S-77. Relates to the steam consumption and friction losses occurring in the Rice & Sargent Corliss engines. The bulletin gives data regarding compound condensing and noncondensing engines and also simple noncondensing types, which were secured from tests made for the purchasers of these engines.

Industrial Cars.—The Orenstein-Arthur Koppel Company, Pittsburgh, Pa. Illustrated brochure. Concerned with the use of Koppel industrial cars and railroads for various purposes. In addition to cars for handling bulky material, others for handling small light weight castings are manufactured and an installation of this character was illustrated in *The Iron Age* July 21, 1910.

Pressure Regulating Valves.—Monash-Younker Company, 88 Centre street, New York City. Pamphlet. Covers the Monash line of pressure reducing valves, which are made in a number of different styles for various purposes. Two of the styles shown are intended for use on vacuum heating systems, but most of them are designed to be used where steam passing through is subjected to rapid pulsation or vibration.

Stoping Drill.—The Denver Rock Drill & Machinery Company, Eighteenth and Blake streets, Denver, Colo. Bulletin No. 8C-2. Illustrated. Concerned with the Waugh stoping drill, in which air is said to escape from the front end, thus making it practically dustless. Almost any shape of steel can be used, although the four-grooved section is the most popular.

Pressed Steel Cars.—The Pressed Steel Car Company, Farmers' Bank Building, Pittsburgh, Pa. Catalogue and booklet. The former covers completely the various sizes and styles of pressed steel railroad cars for freight and passenger service. Illustrated descriptions of a combined baggage and mail car and a quick dumping ore car appeared in *The Iron Age* May 5 and June 9, 1910, respectively. The booklet deals with a number of different styles of steel mine cars. In both the catalogue and the booklet the various types are illustrated and brief specifications supplement the engravings.

Electric Railway Supplies.—The Columbia Machine Works & Malleable Iron Company, Chestnut street and Atlantic avenue, Brooklyn, N. Y. Circulars. Relate to a line of electric railway supplies. This includes illuminated railway car signs, an axle straightener, adjustable armature stands, strain line anchors, gear cases, armature banding and heading machines, fuse boxes and gear cases.

Second-Hand Electrical Machinery.—The F. Bissell Company, 226 Huron street, Toledo, Ohio. Booklet. Concerned with a number of second-hand alternating and direct current motors and new and used alternating current and direct current dynamos which the company offers for sale.

Drawing and Stamping Presses.—Ferracute Machine Company, Bridgeton, N. J. Temporary Catalogue No. 17. Supersedes all previous catalogues and illustrates and describes the various kinds of presses built by this company. These include light and heavy stamping presses, drop hammers, foot, hand and gravity presses and all kinds of punching and cutting presses. *The Iron Age*, February 17, 1910, contained an illustrated description of a very large toggle drawing press for the production of large seamless metallic burial caskets.

Acetylene Burners.—American Lava Company, Chattanooga, Tenn. Circulars. Treat of the Hilo De Luxe burner employing acetylene for house lighting. The special feature of this burner is that the gas flame may be turned low without carbonizing.

Steam Boilers.—The Babcock & Wilcox Company, 85 Liberty street, New York City. Pamphlet. Illustrates and describes the Stirling boiler, which consists of three transverse parallel steam and water drums connected to one mud drum. The various features of the boiler are described and the special points supplemented by engravings.

Exhaust Heads and Grates.—H. L. Prentice Company, 24 Sherman street, Chicago, Ill. Booklet. Treats of the Prentice exhaust pipe heads which are made in 17 different sizes to care for the exhaust from a 1-in. pipe up to a pipe 18 in. in diameter. The Prentice rocking grates for locomotive and tubular boilers are illustrated, both when the surface is being rocked and also when it is flat. A table of specifications for these two types of grates completes the booklet.

Pumps.—The Barnes Mfg. Company, Mansfield, Ohio. Catalogue. Size 6½ x 9½ in.; pages, 248. Relates to a line of iron and brass pumps for hand, windmill and power use which are manufactured in a great variety of styles to meet almost any requirement and range from a small household pump to centrifugal pumps having a capacity of 5500 gal. per minute. Gas engines for driving the larger types are shown and space is given to various pump accessories.

Pyrometers.—Robert W. Paul, New Southgate, London, N., England. Booklet. Deals with the measurement of the temperatures in industrial operations by Paul's direct reading electrical pyrometers which are made to operate either by the thermo-electric or the resistance method. The construction of both types is briefly described and a partial list of users is appended.

Scales.—The Dodge Mfg. Company, Yonkers, N. Y. Set of loose leaf circulars. These pertain to a line of scales in which both springs and loose weights have been eliminated, the weight being obtained by the movement of a circular disk toward and away from the pan. A number of different styles are shown, all of which are made in sizes ranging from ½ oz. to 40 lb.

Machinery.—N. O. Nelson Mfg. Company, St. Louis, Mo. Catalogue No. 36. Size, 7 x 10 in.; pages, 459. Describes and illustrates the various lines of machinery handled by this company. These range from a 600-hp. Corliss engine to a small hand operated forge blower. Where a number of different sizes of one article are handled, a brief table of them is given in addition to the text and the illustration.

Iron and Steel Shapes.—Horace T. Potts & Co., 316 North Third street, Philadelphia, Pa. Stock book. Covers the various sizes and shapes of iron and steel handled by this company, followed by illustrations and text describing a line of Swedish solid steel anvils. Standard price and extra lists and tables of weights and gauges and other useful information for workers in iron and steel complete the book.

Elevating, Conveying and Power Transmitting Machinery.—Weller Mfg. Company, Chicago, Ill. Illustrated Catalogue No. 19. Size, 6 x 9¼ in.; pages, 510. Concerned with elevating, conveying and power transmitting machinery and specialties. The different pieces of apparatus are all described and in a number of instances brief specifications in tabular form are given. A number of engravings of installations of apparatus manufactured by this company are scattered through the book.

Pumping Machinery.—The Weinman Pump Mfg. Company, Columbus, Ohio. Circular. Illustrates a few of the numerous styles of pumps for steam, belt and electric drive manufactured by this company. The models shown include pumps for boiler feeding and general service, light service pumps, automatic pumps and receivers, deep well pumps and electric mine and house service pumps.

Machine Tools.—William Sellen & Co., Inc., 1600 Hamilton street, Philadelphia, Pa. Pocket list of machine tools for railway and machine shop equipment. Contains illustrations and brief specifications of the company's leading machines.

Single Acting Open Back Presses.—The Manville Brothers Company, 27 Benedict street, Waterbury, Conn. Bulletin No. 2A. Gives general description and specifications for the No. 30 single acting open back press and also calls attention to the Manville standard four-slide wire forming machine, an illustrated description of which was printed in *The Iron Age*, October 6, 1910.

Metal Working Machinery.—Prentice Brothers Company, Worcester, Mass. Loose leaf catalogue. Size, 8½ x 11 in. Relates to a line of metal working machines which includes

engine and turret lathes, drilling machines with and without tapping attachments and radial arm drills. *The Iron Age*, January 27, 1910, illustrated a 12-in. single belt high speed engine lathe with motor drive, and June 2, 1910, the 21-in. drilling machine and the 7-ft. radial drill.

Surveying Instruments.—Buff & Buff Mfg. Company, Jamaica Plain Station, Boston, Mass. Pamphlet. Treats of the various engineering, surveying and mining instruments manufactured by this company. All of these are illustrated and described and brief specifications given.

Foundry Equipment.—The J. D. Smith Foundry Supply Company, Cleveland, Ohio. Loose leaf circulars. Call attention to a number of different pieces of foundry equipment, including the Cleveland drop pattern and stuffing plate, molding machine, the Cleveland squeezer, combination roll over and squeezer molding machines, saw for brass and aluminum and the Cleveland Junior core oven, all of which are illustrated. Their advantages are pointed out and brief specifications given.

Special Machinery.—P. F. Campbell, 55 Laurel street, Philadelphia, Pa. Catalogue. Size, 6 x 9 in.; pages, 72. Illustrates and describes a line of machinery for breaking, mixing, grinding, pulverizing and bolting various kinds of material. Besides these machines space is given to steel elevator buckets, link belts, sprocket wheels, pulleys, friction clutches, shafting hangers, wire cloth and millstones.

Automatic Gear Cutting Machines.—The Standard Mfg. Company, Bridgeport, Conn. Circular. Points out the advantages of the Standard automatic gear cutting machines which are claimed to reduce the cost of cutting gears, eliminate spoilage and increase production. Three different sizes of machines for cutting gears whose maximum diameters are 4, 6 and 8 in., respectively, are illustrated and complete specifications of the smallest model are given.

Electrical Wires and Cables.—The American Steel & Wire Company, 115 Adams street, Chicago, Ill. Catalogue and handbook. Illustrated. Presents in serviceable form interesting information to users, engineers and students. All the various types of bare and insulated electrical wires and cables commonly used are fully described and a considerable amount of engineering data and descriptive matter including an abridged dictionary of electrical terms has been introduced to make the book a fairly complete treatise on electrical conductors. General data are given on the properties of conductors, the manufacture, packing and shipping of wire and a number of wiring formulæ and tables are included. Bare wires and cables are next taken up and tables are given of the prices, sizes, weights, strengths, &c. Magnet and office wire are treated in the same way, as well as weatherproof and slow burning wires and cables and lampcord. Considerable space is given to rubber covered and lead encased wires and cables and the methods of manufacturing and installing them. A 42-page electrical dictionary follows and an extensive alphabetical index complete the catalogue.

Steel Tired Wheels.—The McConway & Torley Company, Forty-eighth street and Allegheny Valley Railway, Pittsburgh, Pa. Pamphlet. Describes the McConway car wheel, which is of the built-up type with a steel tire. The wheel center is a solid casting, the hub is iron and the tire is of the usual rolled steel type. The general construction of these wheels is given and the text supplemented by illustrations.

Water Meters.—National Meter Company, 84 Chambers street, New York City. "Blue Book." Treats of the various types of water meters manufactured by this company since its foundation in 1870 up to the present time. The special features of these different meters are given and attention is called to the straight reading register with which all are equipped.

Circuit Breakers.—The Cutter Company, Nineteenth and Hamilton streets, Philadelphia, Pa. Publication entitled *Protection*. Size, 5 x 7¼ in.; pages, 128. Gives a brief story of the protection afforded the electric motor and motor driven tools by the I-T-E circuit breaker. After comparing the protection afforded by the circuit breaker and the fuse, the operation of the I-T-E circuit breaker is described followed by a table of capacities of circuit breakers best adapted for direct current motors of a given size and voltage. Special types of breakers are next described and this is followed by a price-list and wiring diagrams for the various styles and sizes.

The Duncannon Iron Works, at Duncannon, Pa. which recently passed into the control of the Light interests at Lebanon, Pa., will be put into operation at an early day.

The Pittsburgh, Bessemer & Lake Erie Railroad, operated by the Carnegie Steel Company of Pittsburgh, has declared a semi-annual dividend of 3 per cent. on the preferred stock, payable December 1.

The Erie Stamping & Mfg. Company, Erie, Pa., increased its capital stock from $50,000 to $150,000.

The Pressed Radiator Company of America Continues to Grow

The steadily increasing demand for the products of the Pressed Radiator Company of America, Pittsburg, has made it necessary for the company to augment its manufacturing facilities. The company recently placed an order with the E. W. Bliss Company, Brooklyn, N. Y., for three large geared presses, weighing approximately 25 tons each, which are now being installed and will finish out the line of 12 large presses necessary to give one press for each of the 11 operations to complete a radiator unit, with one press to spare, thus making the operations continuous and doubling the daily output. The assembling, finishing, testing and shipping departments have all been enlarged so as to bring them up to the same daily capacity as the press department. This is the second time during the current year that the manufacturing facilities of this company have been practically doubled. During the month of October the actual shipments were the largest in the history of the company, while the orders booked during the same month exceeded the shipments by 60 per cent.

Cast Iron Pipe Foundry at Port Arthur, Canada.—In conjunction with the blast furnace of the Atikokan Iron Company, at Port Arthur, Canada, a large foundry is to be erected for the manufacture of cast iron pipe and car wheels. It is stated that $500,000 will be expended in the project. This will provide an outlet for much of the pig iron produced by the present furnace, which has a daily capacity of 200 tons. The enlargement of the furnace plant is under serious consideration.

The Vincent Steel Process Company, Detroit, Mich., has been allowed by the Treasury Department the benefit of the usual drawback in duty on the exportation of tools and automobile parts manufactured with the use of imported tools and parts by a special process of tempering. In liquidation, the quantity of imported parts and tools which may be taken as the basis for the allowance of drawback may equal the quantity used as declared in the drawback entry, after official verification of exported quantities, provided they shall not exceed a corresponding imported tool or part for each tool or other article exported.

The Duncannon Iron Works, at Duncannon, Pa., has been purchased by H. H. Light, president of the Lebanon Valley Iron & Steel Company, Lebanon, Pa. The new company, which will be known as the Duncannon Iron Works, is chartered with an authorized capital stock of $300,000, of which $150,000 is 6 per cent. cumulative preferred and $150,000 common. The company has since been organized with H. H. Light as president; S. P. Light, treasurer, and William S. Davis, secretary. The directors include S. L. Light and J. Warren Light, all of Lebanon, Pa., in addition to the officers named.

The Grove City Wire Novelty Company, Grove City, Pa., was organized some time ago by W. F. Fessler, late of New Castle, Pa., and residents of Grove City. The company has completed the erection of a plant, and is now making wire specialties. The site secured is about 75 x 80 ft., on which a concrete block building, 30 x 60 ft., equipped with wire cutting machines, punch, drill press, &c., and a 10 x 12 ft. tinning department has been erected. The company will sell its products from Grove City for the time being. Later on salesmen will visit the hardware trade.

Iron Hoops for Wooden Water Tanks

From a committee report presented at the annual meeting of the American Railway Bridge and Building Association at Denver, Colo., in September, the *Engineering News* condenses the following:

Flat Hoops.—Until recently flat hoops were used almost universally. Many advocate this style as the best, claiming that the hoops have a more uniform bearing on the staves, do not crush the fibre of the wood, and if properly put on and cared for will outlast the staves. The experience of others has been to the contrary. Flat hoops have been removed after a comparatively short service, badly corroded on the inside and with the staves badly decayed under the hoops. Location of the tank is a factor in the life of a hoop. At a terminal, perhaps next to an engine house or a clinker pit, the hoops will deteriorate rapidly. There are instances in which the water in the tank is especially injurious to the hoops, and location near salt water is also a severe test. In thickness they run from ⅛-in. to ⅝-in. and in width from 3 to 6 in. Some roads use a uniform thickness and vary the width; some use a uniform width and vary the thickness, while others use various widths and thicknesses. Steel hoops are found to be brittle, and often break while being tightened, or as the result of the swelling of the tank, or on account of unusual weather conditions. The most serious objection is that they corrode more easily than wrought iron. Galvanizing lengthens their life, but does not eliminate the brittleness, and many claim that the galvanizing covers surface defects that would otherwise cause the rejection of the material. Galvanized hoops should be inspected before and after galvanizing.

Round Hoops.—Round hoops have come into use only within the last few years and seem to be proving very satisfactory. Wrought iron is considered the best material and is more easily obtained in this form than in the flat shape. Mild steel is sometimes used, but has the objection of brittleness. One argument in favor of the round hoop is that fully 90 per cent. of its surface is exposed to view; deterioration is more easily discovered and painting is more effective. With the flat hoop, at least 40 per cent. of its surface is next to the staves and practically inaccessible. It is claimed that because the round hoop has less bearing surface on the stave it crushes into the fibre and not only weakens the stave, but induces decay. Others who have had experience say that if the hoop is properly put on there is no appreciable crushing of the fibre. The round hoop forms a ledge or pocket on the upper side which allows the accumulation of dirt, cinders and moisture. Some claim that this is not a serious matter because the sun and wind evaporate the moisture before harm can result. The Wheeling & Lake Erie Railway calks the round hoops with oakum and fills the top space with roof cement to shed water and also to protect the hoops.

Square Hoops.—The committee received no report from any railway using square hoops as a standard. The Illinois Central Railway has one tank equipped with hoops ¾ x 2 in., which may be called square hoops for all practical purposes. These have been in service for about 20 years, and show no great sign of deterioration. In parts of Mississippi are many wooden tanks with hoops from 1⅛ in. to ¾-in. square, put on in three sections.

Segmental Hoops.—The segmental hoop has one flat side and does away with the objection to the round hoop of crushing into the wood and of collecting and holding dirt and moisture. It has all the advantages of the flat hoop, with the added one of being narrower for the same length; and, because it is heavier at the center it is not weakened so quickly by corrosion. The material is a standard shape that is carried in stock.

In tanks 20 to 30 ft. diameter it is usual to have the hoops in three sections; some railroads use four and others use two sections. The two-section hoop is difficult to erect, and by using more sections the stress on the staves can be more uniformly distributed.

G. W. McClure, Son & Co., Bessemer Building, Pittsburgh, Pa., have under way the erection of 10 McClure three pass fire brick hot blast stoves, each 22 x 100 ft., for the Bethlehem Steel Company, South Bethlehem, Pa., five of which are about completed. This installation will make a total of 22 McClure stoves at the Bethlehem Company's works. The firm has also recently relined six stoves at the same plant. Four McClure stoves, 22 x 95 ft., are being installed at the new blast furnace of the River Furnace & Dock Company, Cleveland, Ohio, and four McClure stoves, 21 x 90 ft., at the blast furnace of the Josephine Furnace Company, Josephine, Pa.

The Harbison-Walker Refractories Company

The report of the Harbison-Walker Refractories Company for the year ending September 30, 1910, shows earnings of $2,073,340, after deducting $340,717 for depreciation and ordinary repairs and maintenance. Extraordinary expenditures and amounts charged off for depreciation of mining outfits and depletion of minerals were $205,594. Interest on bonds was $88,875; preferred dividend at 6 per cent., $576,000, and common dividend for three quarters, at 2 per cent., $270,000, leaving net surplus of $932,871. The surplus account is now $4,784,859. The statement is the best the company has yet made, but on account of the falling off in business only 73 per cent. of capacity was used. The gross business made a new record because of the increasing percentage of high grade products turned out. The balance sheet as of September 30, 1910, is as follows:

Assets.		
Property account (properties and franchises owned and operated by the constituent companies)		$28,599,396.62
Betterments, completed		1,147,700.03
Betterments, uncompleted		497,551.22
Deferred charges to future operations		298,608.05
Current assets:		
Inventories at cost	$1,590,759.44	
Accounts receivable (accounts of constituent companies against each other omitted)	1,407,081.57	
Bills receivable	24,105.64	
Cash	565,437.22	
Investment securities:		
Investment of reserves	222,000.00	
Own bonds purchased by company and held in treasury	187,000.00	
Other securities	235,399.42	
		4,181,783.29
Total assets		$34,725,039.21
Liabilities.		
Capital stock:		
Preferred	$9,600,000.00	
Common	18,000,000.00	
		$27,600,000.00
Bonds, total issue	$3,500,000.00	
Less purchased and canceled as per sinking fund requirements, $1,410,000; canceled in anticipation of sinking fund requirements, $525,000	1,935,000.00	
		1,565,000.00
Reserves:		
Bond interest and taxes (accrued but not yet due)	$26,842.08	
Reserve to cover premium at redemption of bonds	3,015.56	
Clay, coal and ganister properties depletion fund	141,695.76	
Sundry reserves	297,644.79	
		469,198.19
Current liabilities:		
Accounts payable (liabilities of constituent companies due each other omitted)	$209,270.09	
Pay rolls	96,711.12	
		305,981.21
Surplus		4,784,859.81
Total liabilities		$34,725,039.21

The Noble Electric Steel Company, Heroult, Cal., is preparing plans for four additional furnaces. The company's furnaces have been idle since July, owing to the inability of the Northern California Power Company to furnish sufficient power, but will be started up again as soon as heavy rains set in. The company is also developing a number of chrome properties near Chromite, Shasta County, and at Lowery, Tehama County. With the completion of the new furnaces the plant will have a daily capacity of nearly 100 tons of pig iron.

President W. C. Brown of the New York Central says that neither that road nor any of the New York Central Lines will make any effort to dispose of any securities in the immediate future. He adds that practically every engine and car owned by the various roads in the system is in service and there is a shortage of equipment.

New Publication

Edison: His Life and Inventions. By Frank Lewis Dyer, general counsel for the Edison Laboratory and allied interests, and Thomas Commerford Martin, ex-president of the American Institute of Electrical Engineers and secretary of the National Electric Light Association. Two volumes, octavo, cloth. Publishers: Harper & Brothers, Franklin Square, New York. Price, $4 per set.

A halo of romance surrounds the life of Thomas A. Edison, the greatest inventor and discoverer that the age of electricity has produced. The public has in a fragmentary and desultory way been informed of his achievements as, from time to time, he has startled the world with daring incursions into new fields, blazing a path for other investigators. His history from the time he began to earn a living as a newsboy and then as telegraph operator has been one of continuous and tremendous activity, usually crowned with commercial success. His inventive genius has been marvelous, his fame resting on no single accomplishment, but on a succession of important developments. Up to this time no full and authoritative story of Edison's life and achievements has been written. The authors of this work have most happily collaborated in the presentation of the history of Mr. Edison's life. As a result they have given to the world a publication which will not only afford a greatly appreciated fund of information regarding his inventions and discoveries, but will also prove a delight to those who take pleasure in records of personal triumph. The work is at once a contribution of permanent value to literature and an inspiration to all lines of human endeavor.

One of the chapters which will be read with special interest by iron and steel manufacturers is that which treats of Mr. Edison's efforts to concentrate into commercial form low-grade iron ore. The plant which he erected at Edison, N. J., was described in *The Iron Age* in 1897, at the time the concentrating plant was in operation and when it appeared likely to prove a commercial success. The great experiment aimed to give Eastern iron and steel manufacturers a supply of raw material which would make them better able to compete with manufacturers in sections having nearby deposits of much richer ore. Relative to this matter the book says: "If a person qualified to judge were asked to answer categorically as to whether or not that enterprise was a failure, he could truthfully answer both yes and no. Yes, in that circumstances over which Mr. Edison had no control compelled the shutting down of the plant at the very moment of success, and no in that the mechanically successful and commercially practical results obtained, after the exercise of stupendous efforts and the expenditure of a fortune, are so conclusive that they must inevitably be the reliance of many future ironmasters. In other words, Mr. Edison was at least a quarter of a century ahead of the times in the work now to be considered." The statement is made that over $2,000,000 was spent in this attempt. The knowledge gained in the concentrating plant was applied in building a plant for manufacturing Portland cement.

Applied Thermodynamics. By H. W. Spangler. Cloth bound. Size 6 x 9 in., 160 pages, 76 diagrams. Price $2.50. Published by John Joseph McVey, 1229 Arch street, Philadelphia, Pa.

The book contains the substance of lectures given by the author to the students in the engineering courses at the University of Pennsylvania, relating to the application of thermodynamics to engineering problems. It is assumed that before reading this book some short treatise on elementary thermodynamics, preferably the author's "Notes on Thermodynamics," has been studied as the methods developed there are used without derivation in this text. In many cases numerical problems have been solved directly without the development of algebraic formulæ in which numbers might be substituted. As far as possible the attempt has been made to avoid abstruse discussions and unnecessary refinements and to approach the subject from the standpoint of an engineering student properly prepared for the work.

The work is divided into twelve chapters, the first two of which deal with the flow of gases and vapors and the flow of steam, respectively. The third is devoted to a discussion of the various kinds of efficiencies and how they may be calculated. Air and steam engines occupy the next two chapters and chapter VI deals with tests of the latter type of prime mover. Refrigeration by air and volatile liquids is dealt with in chapters VII and VIII and the next chapter is concerned with absorption machines. The data available on these machines are so meager that any attempt at thermodynamic treatment is only tentative, and while reasonably consistent results may be obtained with the data at hand, the text of this particular chapter is of value in emphasizing the necessity of extended experimental work. Internal combustion engines are discussed in the next two chapters, the final one being devoted to evaporators, stills and cooling towers.

Notes on Mechanical Drawing. By Horace P. Fry. Size 6 x 9 in.; pages 61; 34 illustrations and 17 full-page plates. Bound in cloth. Price, 50 cents. Published by the University of Pennsylvania, Philadelphia, Pa.

This book is a series of notes prepared for the use of students in mechanical engineering at the University of Pennsylvania. The matter contained is not an exhaustive treatise on mechanical drawing but is intended to supplement the class instruction. The notes cover recognized standards and conventions used in American practice together with tables and other information valuable in the drafting room.

Instructions are first given regarding the preparation of drawings and the proper kinds of lines to be used, with instructions on lettering and sectioning followed by examples of the various standard types of letters. The making of assembly drawings is next taken up, after which come instructions for the representation of gears and screw threads of various standards. An index and a list of illustrations completes the book.

The Great Lakes Engineering Works and Its Products.—The Great Lakes Engineering Works, Detroit, Mich., has issued a 42-page brochure, which is largely a reproduction of articles that have appeared from time to time in marine journals, descriptive of vessels, marine engines and other work turned out by this company. The illustrations are numerous. Among them is one of a section of the Detroit River tunnel, 262 ft. 6 in. long and 23 ft. 4 in. in diameter, being one of 11 sections built for the Michigan Central Railroad. Excellent portraits are given of the officers of the company. The Great Lakes Engineering Works, which was incorporated in 1902, launched its first steamer May 5, 1904, and since that time has had the distinction of having turned out a larger tonnage of vessels than any other individual concern of like character in this country. Antonio C. Pessano is president and general manager; George H. Russel, vice-president; John R. Russel, vice-president and treasurer; H. W. Hoyt, vice-president and secretary.

The General Foundry Company, Bradford, Pa., has decided to remove its plant to Warren, Ohio, where it will be built on a much larger scale to meet the growing demands of the trade for its converted steel castings.

The Tariff Commission Campaign

The National Tariff Commission Association, formed to promote the creation of a permanent non-partisan tariff commission, has issued a statement showing the present condition of this movement, from which the following extracts are taken:

"The active movement in behalf of a permanent tariff commission began several years ago, when the National Association of Manufacturers appointed a tariff commission committee, which finally called the Indianapolis convention of 1909.

"The Indianapolis convention called the attention of the entire country to the need of a permanent tariff commission, and resulted in the formation of a Committee of One Hundred to conduct an aggressive campaign. This committee finally became the National Tariff Commission Association, with John Candler Cobb, of Boston, as president; Henry R. Towne, treasurer; H. E. Miles, chairman of the Executive Committee; and Henry T. Wills, well known in foreign trade matters, as secretary. So strenuous and well directed has been the work of the association in behalf of a tariff commission that practically every important State convention held this year has indorsed the movement.

"The Tariff Commission Association's educational campaign and its efforts in Washington led up to the appointment of the present Tariff Board. The board is recognized as an important step in the effort to secure a real commission and will doubtless be made a permanent organization. While possibly unsatisfactory to some advocates of tariff reform, the board certainly is an earnest of the present administration's honesty of purpose.

"That the Tariff Board has already proved the wisdom of its appointment in several ways is unquestionable. It has demonstrated that there is difficulty in securing foreign and domestic costs of production, but it has also convinced the country that tariff making can be put on a scientific and practical basis by means of thorough, impartial and technical investigations conducted by a competent and permanent board of experts, reporting to Congress and the President.

"The principal, and by far the most important, lesson it has taught, however, is that a Tariff Board consisting alone of advisors to the President, with a temporary status and no judicial powers, is inadequate and unsatisfactory. This fact is now thoroughly recognized, and is one of the reasons why the National Tariff Commission Association is making every effort to have the present board given additional powers, or, still better, to induce Congress during the session beginning December 8 to transform it into a genuine permanent tariff commission with a status equal to that of the Interstate Commerce Commission.

"A new and important development in the tariff commission problem, one in fact only now becoming appreciated by the country's business interests, is the vital necessity of the commission form of tariff making in order to prevent a radical swing of the pendulum to the other extreme. In other words, a non-partisan, permanent commission of tariff experts is now necessary to protect the industries actually deserving of protection.

"Protection equalling the difference in cost of production in this country and abroad, with a small additional margin for safety, is a reasonable policy on which to base the tariff. If this protection is removed, or unduly lowered, naturally it will be necessary to reduce wages, as wages constitute the larger part of the cost of production. Insufficient protection, or a half-high-enough tariff, would offer no bulwark against the manufactured products of low-wage Europe, and the result can easily be imagined.

"This form of tariff can only be constructed in any degree of accuracy, and of common honesty, through information obtained by a permanent tariff commission. To secure the creation of such a commission is the task of the National Tariff Commission Association. As an important part of its work, the association will hold a great tariff commission convention at Washington January 11 and 12, 1911, which will be attended by prominent advocates of the commission idea from all over the country, and which is sure to give a remarkable uplift to the general proposition."

The address of President Cobb is 60 State street, Boston, Mass., and of Secretary Wills is 66 to 72 Lafayette street, New York.

The British Iron Market

Changes in the market for pig iron and finished materials in Great Britain have not been of great moment in the past month. The latest reports concerning pig iron are rather more encouraging and in the first week of November an increase in pig iron buying was reported. The shipments from the Cleveland district in October were better than expected, the total being 111,374 tons, or 3838 tons more than in September, but 15,530 tons less than for October, 1909. The total has been exceeded in only two months this year. For the first 10 months of 1910 the shipments were 994,501 tons, or less than in the corresponding period of any year since 1905. At the close of October the stock of Cleveland pig iron in Connal's public stores was 486,492 tons, an increase in the month of 13,442 tons. Cleveland warrants, which were 50 shillings a ton in the last week of August, were steadily below that figure throughout September and for most of October, but on October 28 the price rose to 50 shillings 1 penny for No. 3, and merchants and manufacturers have latterly been maintaining 50 shillings per ton for early delivery. The lockout of boilermakers at shipyards has affected the market for finished materials, particularly plates and shapes. In October launchings were considerably cut down by reason of the strike, 14 vessels aggregating 22,500 tons being launched in that month, against 47,000 tons in September. Several orders were placed for steamers. Prices of plates and angles have been maintained at the October advance, quotations on the Northeast Coast being £6 15 shillings for steel ship plates and £6 7 shillings 6 pence for angles. Naval work has helped the Sheffield steel trade, armament manufacturers being good buyers. A stronger market for structural steel is reported in the Midlands. The makers of iron bars in South Staffordshire have been having rather strong competition from Belgian works. The export trade in galvanized sheets has been excellent, and domestic inquiry for both galvanized and black sheets is better.

The extensive manufacturing property of the Western Electric Company in Chicago, on Van Buren, Clinton, Jefferson and Harrison streets, representing an original investment of $3,718,316 has been sold recently to a syndicate of Chicago capitalists. Since the completion of the Western Electric Company's new plant in the Hawthorne district, the business has been gradually transferred from the old plant, which has therefore been on the market. The property sold comprises 26 buildings, the most important ones of fireproof construction, with an electric power plant of 1000 hp. It will now be rented to small manufacturing industries. W. V. Kelley, president of the American Steel Foundries Company, and R. P. Lamont and George E. Scott of the same company are members of the syndicate which has purchased the property. The Western Electric Company has retained a lease of 500,000 sq. ft. of floor space for two years for general office purposes.

The Inspection of Castings*

The Importance of the Foundry Inspector's Work Illustrated by Incidents from a Varied Experience

BY J. A. GEARHART.

The inspection of castings from an inspector's standpoint covers in the main just two conditions—that is, the castings are either good or they are bad. In other words, they are good enough for the service intended, or they are unfit for this service and should be rejected; but in the actual inspection of the work at the foundries to arrive at these two conditions, considerable responsibility rests on the shoulders of an inspector. He must be able to distinguish a real defect from a slight flaw. He must be able to decide whether a defect when found is of sufficient importance to affect the strength or wearing qualities of the casting, or, if it is in a part not subject to any strain in service, it will, therefore, answer the purpose for which it was designed and is good enough for use.

Details That an Inspector Must Know

To inspect castings and be just and fair to both employer and manufacturer, an inspector must know the exact place the casting is to be used, what its functions are in service, and all other information it is possible for him to obtain, so that he will be competent to decide whether it is good or bad. In checking to dimensions on prints he must know how close to drawing sizes the casting must be in all parts, so that it will fit in the place for which it is designed, as we all know castings of the same design and made from the same pattern are not always exactly of the same measurements in all their dimensions, nor ever will be, due to the variations in different heats or casts of the metal as well as differences in the molding and a dozen other variations too numerous to be mentioned.

There are some dimensions where ¼ in. variation can be allowed either above or below the given size, while on other dimensions 1-16 in. allowance either way is too great. Some surfaces must be straight and parallel with others so that clearances at other points may be maintained, while other surfaces must be at right angles so that certain points will have equal wear in service.

An inspector must know what pockets are to be cleaned, what corners are to be chipped square, what corners a fillet can be allowed and the largest radii permissible on any fillet. On castings of intricate design, where there are unequal shrinkages, the inspector must know when the manufacturer has cast these with shrinkage brackets to overcome any checking, if it will be necessary to chip these brackets to the original contour, or if the shrinkage brackets may be left on and the castings accepted. The inspector must know when he finds a shrinkage crack if it is of sufficient cause for rejection or if it is as good for the purpose intended as one on which no cracks appear. An experienced inspector will generally know from the shape of the casting and the method of molding where the shrinkage cracks or blowholes are most likely to occur. An inspector who knows where and how his castings will be used will save considerable money for the foundryman as well as time on the delivery of the work for his employer.

Welded Steel Castings

At the present time, with the different welding apparatus used so extensively in the foundries making steel castings, when the inspector finds a casting that has been welded it is a question whether to accept or reject it, as he has no means of telling how serious the defect was before it was welded.

The author knows of one company that objected at one time to any welding whatsoever of any part of a casting, and any casting showing the least indication of welding was rejected at once. Some foundrymen who had contracts to furnish castings to this company did all the welding that they required before annealing, after which the surface was ground or chipped smooth and then thoroughly annealed. The castings when offered to the inspector were coated with a heavy scale. It was very difficult to tell in these cases if the castings were welded or not. Differences of opinion arose between the manufacturers and the inspectors until so many castings were involved that shipments were seriously delayed and the company needed the castings.

This company now specifies that all castings that are intended to be welded must first be shown to the inspector, and if in his judgment the defect will not affect the strength or wearing qualities, and the welding will improve the appearance, he stamps the casting with his private mark near the defect, but not close enough to be obliterated in the welding; after the welding has been finished the casting is again shown to the inspector, and if done in a workmanlike manner is then accepted and restamped near the trademark or pattern number. This method has worked very successfully, and in my opinion is fair to both parties.

Manufacturer and Inspector Should Co-operate

It has been the author's experience that the best results have been obtained when an order has been placed subject to inspection by the manufacturer and the inspector going over the drawings together, so that important dimensions will be fully understood and can be watched by the manufacturer in the making of the patterns as well as in the molding and casting. This plan, if followed, will generally save the foundrymen considerable money as well as time in completing a contract. For instance, an order is taken; the patterns are made and placed in the sand, and when the first shipment is ready to go forward a request is sent for the inspector. On his arrival the manufacturer finds for the first time that the castings must fit certain gauges on which a very small limit of variation is allowed. This generally necessitates the castings being returned to the grinding or chipping room to be made to fit these gauges, but in some cases means their rejection entirely, as they cannot in their present condition be made to fit the gauges to the satisfaction of the inspector.

This could all have been avoided if the manufacturer and inspector had conferred together before the work was started and everything gone over and explained. The manufacturer would have known what were the important points on each casting, and could have governed the work accordingly when making the patterns as well as issuing the necessary instructions to his different departments. The author has found in his experience that both expense and trouble have been saved by following this plan. He does not wish to convey the thought that the manufacturer should request the inspector to check patterns.

The inspector should be glad to have the oppor-

* Read before the Pittsburgh Foundrymen's Association, November 7, 1910. Mr. Gearhart is connected with the inspection bureau of the Bullick-Henderson Company, Pittsburgh.

tunity to check sample castings, but never to check patterns, as he is not familiar with the shrinkages of the material nor the methods of molding at any one plant, as he is only interested in the finished product.

An instance that comes to mind is of two castings, one fitting into the other when in service. The top casting was made by one firm, while the bottom was made by another. Both manufacturers were notified that the castings must fit certain gauges and come within certain limits. The sample casting for the top was made and found to agree with the gauge. When the sample casting for the bottom was made, it was found too small to allow the gauge to enter. The manufacturer showed the inspector where an order for 500 castings of the same design had just been completed. They had been inspected and accepted, but had not been gauged. The patterns had not been taken from the sand, and were then running on the present order. As no objection had been raised by the parties assembling the 500 castings, it was assumed that everything was going together without any trouble and, therefore, no reason could be seen to change any patterns to agree with these gauges. It was conceded by the foundryman that the measurements were a little under the blue print size. It was about 3-32 in. in a 12 or 15 in. distance, but this was so small in his opinion that no trouble would be experienced. When it was explained by the inspector that all castings of that design must fit the required gauges so as to allow castings from different foundries to be assembled, and all be standard, it was at last agreed that one or two patterns would be changed so that castings to be shipped on this inspector's order would fit the gauges and be acceptable to him. The manager and inspector then returned to the office where a telegram was awaiting the manager advising that the 500 castings shipped on the previous order could not be used on account of being too small in the dimensions covered by the gauge. It is needless to say that orders were immediately given to change all patterns to agree with the inspector's gauge, and a duplicate gauge was made for the foundry to avoid any similar mistakes in the future.

Drawings and Specifications

The drawings should be made to show clearly every every detail necessary to guide the manufacturer in producing a casting as well as for the information of the inspector. Often it is necessary to show the use of a particular part of the design, as, for instance, in the making of a type of cast steel box form of bolster, ¾-in. holes were shown, and the inspector found the shop busy reaming these holes to exactly ¾ in. They were drain holes only, and should have been so marked on the drawing.

When castings are made to specifications prescribing test coupons for physical test, especially in cast steel work, the inspector should see that these coupons represent truly the casting from which they were taken, and that they have not had any additional treatment, either by hammering, additional annealing or otherwise. It is common practice for most inspectors to have a hammer with a private mark for stamping coupons and accepted castings, but the inspector should use judgment in the different shops in the method of handling the test coupons after they have been selected and stamped.

Specifications in all cases covering steel castings require that test coupons must be cast on the castings and broken off in the presence of the inspector. It is important to know on what part of the casting and the manner in which this coupon is attached to the casting, so that the results obtained will fairly represent the material.

The author has in mind castings weighing 15 tons each that had coupons attached made by the moulder pressing a round stick in the bottom of the drag after the pattern was drawn and the mold ready to close. This stick was 1½ in. in diameter, and was pressed about 4 in. in the sand at right angles to the casting, and no allowance was made for the gas to escape. The mold was gated at the bottom, and the metal running over the bottom of the mold had pushed all the dirt and loose sand down these holes. Tests and analyses made from these coupons did not represent the material in these castings. Very few bars were found without flaws, and other test pieces selected from the runner of the gate and from the castings taken with a hollow drill did not agree either in physical test or chemical composition with the results obtained from the test coupons.

Inspection of Steel Castings Requires Great Care

The inspection of steel castings calls for the most careful work on the part of an inspector, as it is on steel castings that to distinguish between a mere blemish and a real defect is the most difficult. One casting will be spongy and porous on the surface, but all holes will be small and shallow and will not affect its strength, while another casting will, to all appearance, have a smooth surface with the exception of a few small holes, which when explored will increase in width and volume with the depth, and the casting will be found to be only a shell.

The volume or area of blowholes is often determined by the amount of water the cavity will hold. This test is an old one, and it would be well to caution the inspector before making this test to be certain that the cavity has not been filled previous to his testing.

A number of years ago a workman in a foundry, appreciating the prying curiosity of an inspector on the job, filled the blowholes with hot wax to nearly the top of the surface, and when tried with water the inspector found only a shallow cavity. In another case a workman was found busily filling shrinkage cracks in the fillet of a large steel casting with a metallic substance, which was put in the crack in a soft condition; the crack was filled to the surface, burnt sand was rammed as a top dressing, and the result was, indeed, a work of art. These methods and many others were used a number of years ago to have castings accepted by the inspector, but it has been found cheaper and better for all concerned to so improve shop methods that defective castings will be reduced to a minimum.

Another case shows the results of the methodical habits of the inspector. A specification rigidly prescribed a certain mixture of different pig iron, &c. The inspector always arrived at the shop at a certain time and, unknown to him, his entrance at the gate was always announced to the charging room. He generally proceeded immediately to the charging room, where he found a number of buggies loaded with the prescribed mixture—a certain percentage of charcoal iron, coke iron, scrap, &c.—and while he was present one or two of these loads were dumped in the cupola. This seemed to satisfy him that all was well, and he would proceed to other parts of the works. The buggies charged while he was on the floor were all that were charged each day of that specified mixture; the others were held for his visit the next day and the work proceeded on the personal theories of the foreman.

Inspecting Brass or Bronze Castings

When inspecting brass or bronze castings, aside from the tests and analysis when specified, the inspector should break a few castings from each day's work. This will enable him to obtain an idea of the structure of the material, as well as give him an opinion of how well the metals have been mixed, and if they have been properly stirred in the melting. Any segregation or soft and porous spots will be detected, which is important in castings used for bearings, as any segregation generally develops a hard spot, while soft or porous spots act as a catch all for dirt, both of which in time cause unequal wear or hot journals.

On brass or bronze castings used for interior decorations it is necessary to pay particular attention to the color of the metal, so that it is uniform. The author knows of some racks and fixtures used on cars of which the mixture was specified so as to arrive at a certain shade. On some of the fixtures castings were to be brazed with rolled metal. Orders were placed with three different makers; two of them succeeded in purchasing rolled material similar in color to the castings, but the third depended upon using yellow brass, which he plated and expected to arrive at the desired shade. The inspector had been furnished with sample piece of the composition and color desired. As each strip of rolled material had been separately plated, a difference was noted immediately.

Some Special Points

On iron castings, particular attention must be paid to thickness of sections. These are generally designed to hold a certain pressure, as pipe and pipe fittings, or to bear certain loads, as car wheels, &c. The thickness of sections and walls has been worked out when the castings were designed to give the desired strength with a certain pressure or load. Any deviation in this thickness, especially on the low side, is apt to cause a failure in service, and is not what the purchaser pays for nor has a reasonable right to expect. On a large casting it is the best practice for the inspector to be at the foundry when the mold is closed and to witness the pouring.

A few years ago the author saw the base of a steam hammer that had broken in service. It weighed about 10 tons, and had been in service about four months. The failure was due to the fact that the center of the mold had been filled with old bolts, nuts, washers and other scrap; this center having been anchored in the mold in some manner that held it, the mold was then filled with the molten iron. From all outward appearance the casting was solid.

In the matter of tests these are generally covered by the specifications, and it is the inspector's duty to know that tests he selects are as fair a representative of the material in the castings as it is possible for him to obtain.

An inspector should be amiable, have good sense mixed with sound judgment, and be a gentleman at all times. The author has known instances where castings with small defects were rejected and thrown aside by workmen without asking the inspector to pass upon them, because he was well liked in the shop, and they would not offer any castings to him which they considered doubtful. In other cases, when the inspector has not been so agreeable, every casting was offered to him and the work of inspection made as hard as possible, the men on the shipping floor feeling it their right to match their wits with his and get by the inspector as many castings as possible, defective or not defective.

There is no question that it is the manufacturer's right to decide the manner in which the casting or other material is to be made, but it is also the right of the inspector to pass upon the casting after it is finished, and it is his judgment that must decide whether it meets the requirements or not, and if it is good enough for the purpose intended and designed.

When the mixture has not been specified in the contract, the manufacturer has the right to decide the kind of material to use in making his steel, iron or bronze and the process of making it, but the inspector must decide if each casting is of the grade of material desired, and if it meets the specifications under which it was purchased.

In conclusion, I have always been of the opinion that the heartiest co-operation on the part of both the manufacturer and the inspector is necessary to get the best results and the best work.

The Steel Corporation's Unfilled Orders

The monthly report of unfilled orders of the United States Steel Corporation published November 10 shows that on October 31 these amounted to 2,871,949 tons, or 286,157 tons less than on September 30. The figures for October 31 are the smallest in the history of the Steel Corporation. Chairman E. H. Gary points out, however, that the basis of reckoning unfilled tonnage has been changed, and therefore the present showing is not as bad as it seems. He says:

> The unfilled orders October 31, 1910, agregated 2,871,949 tons. This apparently is the smallest amount ever shown on the books, but the comparison is somewhat misleading, because the basis has been changed to show only orders received from companies outside of our own interest. On the old basis the showing would be 3,583,990 tons, as of October 31, 1910. The low figures heretofore shown were 3,027,000 tons, as of September 30, 1904, but on the present basis they would have shown 2,434,736 tons.

Judge Gary does not indicate when the Steel Corporation ceases to include inter-company business in its published statements, but as it was stated about one year ago that the current figures for unfilled orders more nearly represented actual contracts than those previously given out, the supposition is that the new method of computation dates from that time. The decline in orders on hand between December 31, 1909, and October 31, 1910, was 3,055,082 tons, or 305,508 tons a month. In the following table the statistics of unfilled orders of the Steel Corporation are given beginning with the first issuance of these statistics in 1902:

September 30, 1910	3,158,106	September 30, 1906	7,936,884
August 31, 1910	3,537,128	June 30, 1906	6,809,859
July 31, 1910	3,970,931	March 31, 1906	7,018,712
June 30, 1910	4,257,794	December 31, 1905	7,605,086
March 31, 1910	5,402,514	September 30, 1905	5,865,377
December 31, 1909	5,927,031	June 30, 1905	4,829,655
September 30, 1909	4,796,833	March 31, 1905	5,579,560
June 30, 1909	4,057,939	December 31, 1904	4,696,203
March 31, 1909	3,542,595	September 30, 1904	3,027,436
December 31, 1908	3,603,527	June 30, 1904	3,192,277
September 30, 1908	3,421,977	March 31, 1904	4,136,961
June 30, 1908	3,313,876	December 31, 1903	3,215,123
March 31, 1908	3,765,343	September 30, 1903	3,278,742
December 31, 1907	4,624,552	June 30, 1903	4,666,578
September 30, 1907	6,425,008	March 31, 1903	5,410,719
June 30, 1907	7,603,878	December 31, 1902	5,347,523
March 31, 1907	8,043,858	September 30, 1902	4,843,007
December 31, 1906	8,489,718		

Best Mfg. Company Contracts.—The Best Mfg. Company, Pittsburgh, has been awarded an important contract for a 16, 18 and 20-in. wrought steel water line, with necessary valves and fittings, for the new plant of the American Sheet & Tin Plate Company at Gary, Ind., the contract being for a similar installation to one furnished by the same company some time ago for the Indiana Steel Company, also at Gary. The contract includes fabrication and erection complete, and will enable the Best Company to operate its plant to practically full capacity for the next three or four months. Other contracts taken by this company for the Indiana Steel Company include high pressure pipe work for the No. 1 open hearth plant and high pressure pipe, fittings, &c., from 16 to 20 in., for the power end of the by-product coke oven plant. The company reports railroad orders to be somewhat improved. It is now operating its new iron foundry at Oakmont, Pa., and expects to move its machinery at the Twenty-fifth street plant in Pittsburgh to Oakmont in about 60 days. The general offices and all operating departments will also be located there.

A meeting of committees representing the International Iron Molders' Union and the Stove Founders' National Defense Association was held in Cincinnati at the Sinton Hotel November 9, for the purpose of discussing minor changes in their agreement.

The New Blast Furnace of the Detroit Iron & Steel Company

Features of Construction of the Second Zug Island Stack

In *The Iron Age* of June 1, 1905, details were given of the construction of the blast furnace completed a short time before by the Detroit Iron & Steel Company on Zug Island in the Detroit River, just below Detroit. The company, which is an identified interest of M. A. Hanna & Co., Cleveland, has operated the furnace almost continuously since that time. Meanwhile it has recognized that the growth of local consumption of foundry iron warranted an increase in capacity. Accordingly, in spite of the depressed condition of the iron market, preparations for a second furnace were begun early in 1909 and building operations went steadily forward, the new furnace being blown in immediately upon completion July 21, 1910.

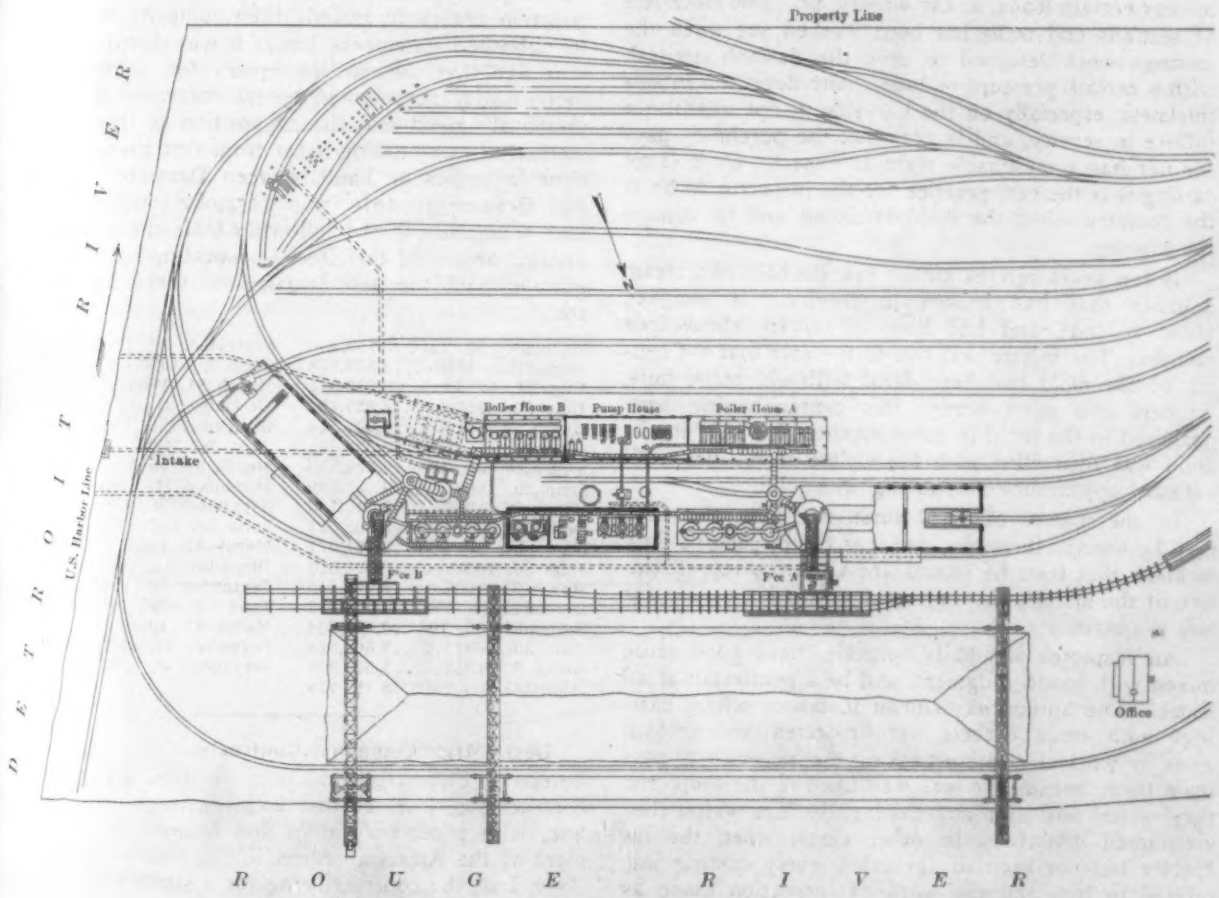


Fig. 1.—Plan of A and B Furnaces of the Detroit Iron & Steel Company on Zug Island, Detroit River.

The position of Furnace B with reference to the old stack A and the Detroit and Rouge rivers is east and toward the Detroit River from the old plant, with the River Rouge on the north, as shown in Fig. 1. The center lines of stoves, boilers, engines, dock, &c., parallel the corresponding installations of A furnace. The new cast house is built at an angle of 45 degrees with the above general direction for the purpose of simplifying the track layout.

The Furnace

The furnace, which was built for a nominal daily capacity of 300 tons, is 80 ft. high with bosh diameter of 18 ft. 6 in. The hearth jacket is built up of cast iron water cooled sections 4 in. thick. The inside diameter of the jacket is 18 ft. 6 in. at the top and 19 ft. 6 in. at the bottom; its hight is 9 ft. The sections are held together by shrink links and the assembled jacket is reinforced by three 1¼ x 12 in. bands. The take-up on each joint of these bands is made with three 2½ in. rods. There are six cast iron columns, resting upon a continuous base plate and supporting the shell, which is built up entirely of ¾-in. plate.

The bosh walls are cooled by means of seven rows of copper plates, in addition to the tuyere coolers, and are reinforced by seven bosh bands, supported from the mantle and bolted together in their exact location before brickwork starts. The brickwork above the mantle is cooled by means of eight rows of cast iron plates, 18 plates per row. Cooling water for bosh plates and hearth is drawn from six manifolds attached to a 10-in. pressure pipe. A smaller pressure pipe located at the mantle feeds the cast iron cooling plates higher in the furnace. Twelve tuyere stocks of the McKee type, illustrated in Fig. 2, are included in the furnace equipment. These stocks are notable for tightness, for low cost and for time saving in renewal of their parts.

The Distributing Device

A detail section of the top filling mechanism is shown in Fig. 3, while Fig. 4 is a general view taken from the platform of the stoves. The distributer is of the McKee type, which has been described heretofore in its essential features. The adaptations to the design of the new Detroit furnace which have been

made in the distributer and in the method of electrical control and not already described are as follows: The equipment is designed to carry the errors of distribution to six points, and is automatically controlled so that the first four skip loads will be dumped without revolving the top. Each of the next four skips is revolved 60 degrees before dumping; each of the next six 120 degrees; then, in sequence, 180, 240 and 300 degrees, and repeat. The top revolves in the same direction for all dumping positions. The automatic switch for starting the top is operated by the hoist engine and the limit switch in turn is actuated by the revolving top. An indicating lamp panel is located in the operator's pulpit and mounted thereon are seven lamps, one of which will be lighted whenever the motor, and consequently the top, is revolving; the other six are used to indicate at what station the burden is being dumped. An interlocking solenoid, energized whenever the hopper is revolving, is so mounted with respect to the small bell operating valve as to prevent motion of the latter when the solenoid is energized, thus preventing the dumping of the small bell while the hopper is revolving.

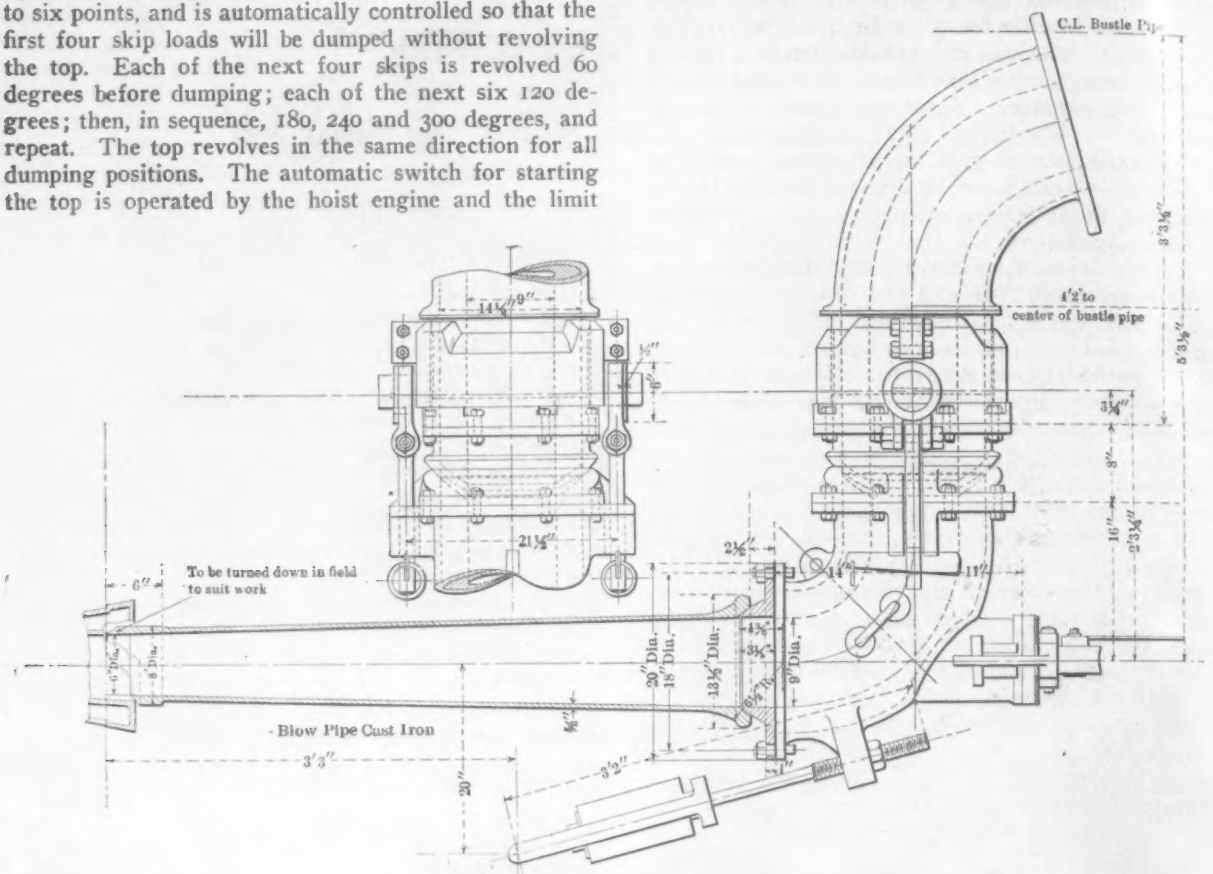


Fig. 2.—Details of the McKee Tuyere Stock.

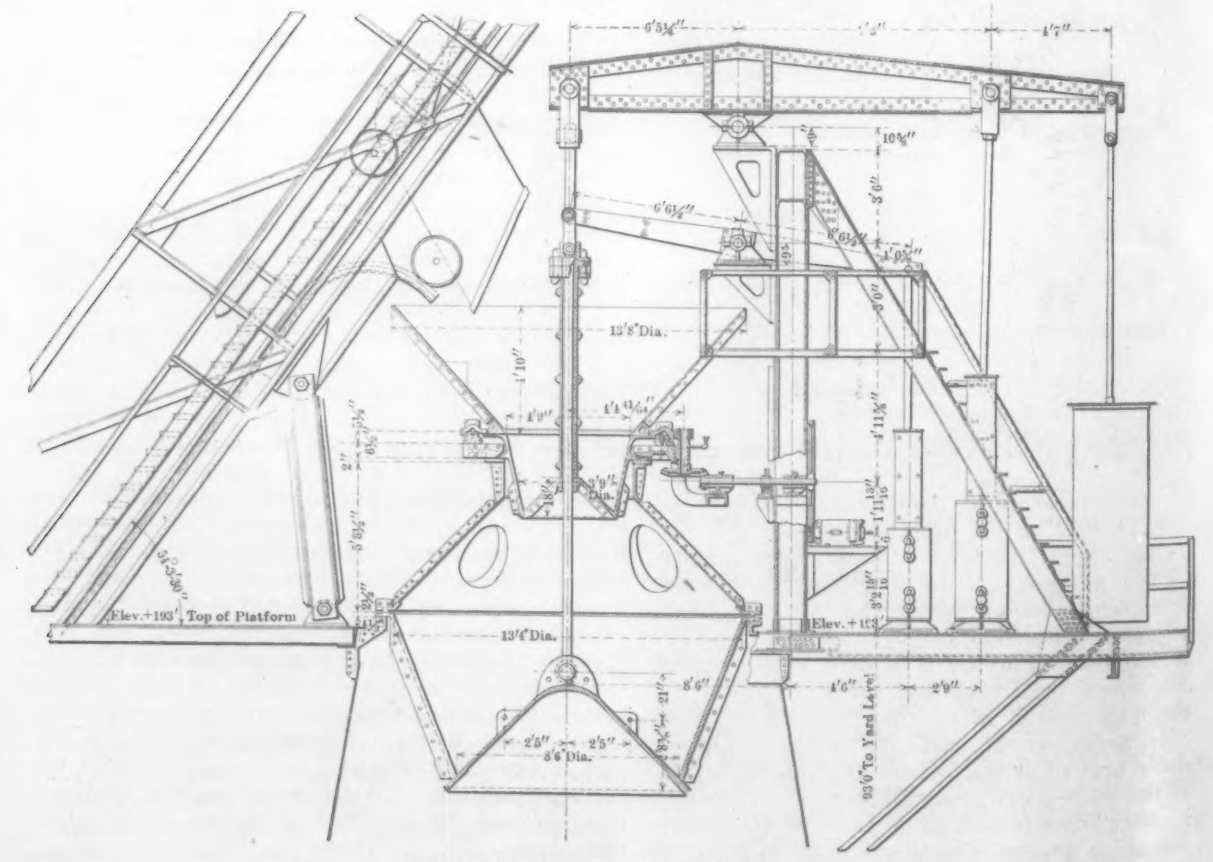


Fig. 3.—Section of Top Filling Mechanism.

Hoisting Equipment and Bin System

The stock is delivered to the McKee distributer from the stock house by means of a double track skip

bridge which has a pin connection to the furnace platform. The large and small bells are controlled through bell beams by 14-in. and 10-in. steam cylinders, respectively. These cylinders are operated through four-way valves from the cage at the base of the skip bridge. The jib crane handles the parts from the furnace top to the ground. The skip cars are operated by a 12 x 14 in. double drum hoist engine located in a brick engine house on the opposite side of the furnace from the stock bins.

The gas is cleaned by being conducted through a single pass dust catcher having its outlet in a Mullen gas washer, which in turn distributes the gas direct to the stoves and boilers.

The cast house is of steel construction inclosed by brick curtain walls. There are 10 20-ft. bays of 70-ft. span. The house is equipped with a Brown pig breaker served by a 5-ton special Brown crane.

The steel stock bins, illustrated in Fig. 6, are all of a simple type. The ore and stone bins deliver their stock into the 10-ton McKee type scale car shown, while the coke bin discharges direct into the two skip cars from either side of the bridge. The ore bins are filled either directly from the stock pile by the ore bridges or by a 30-ton transfer car used in conjunction with the bridges. One new 188-ft. span Brown type bridge was added to the former equipment, with man trolley control. It has a 60 ft. 6 in. cantilever on the shore end and a 74 ft. 2 in. apron on the water end. The total travel of the trolley is 300 ft. The bridge is designed to handle a maximum load of 11 tons.

Four 20 x 85 ft. two-pass Nelson-McKee type stoves comprise the blast heating equipment. After two months' service these stoves have demonstrated their ability to come up to expectations in the matter of holding high heats for a long period of time.

Power Equipment

The boiler plant comprises five 400-hp. Wickes boilers connected to an independent self-supporting draft stack.

Service water is supplied by two Allis-Chalmers 8-in. double suction single stage centrifugal pumps, each direct connected to 120-hp. noncondensing Terry steam turbines. These pumps are designed to operate on a range of steam pressure of 50 to 125 lb. and will deliver throughout this range of steam pressure 3,000,000 gallons each against a total net head of 132 ft. The old standpipe used in connection with A furnace was raised 25 ft. to maintain the head necessary on the new furnace.

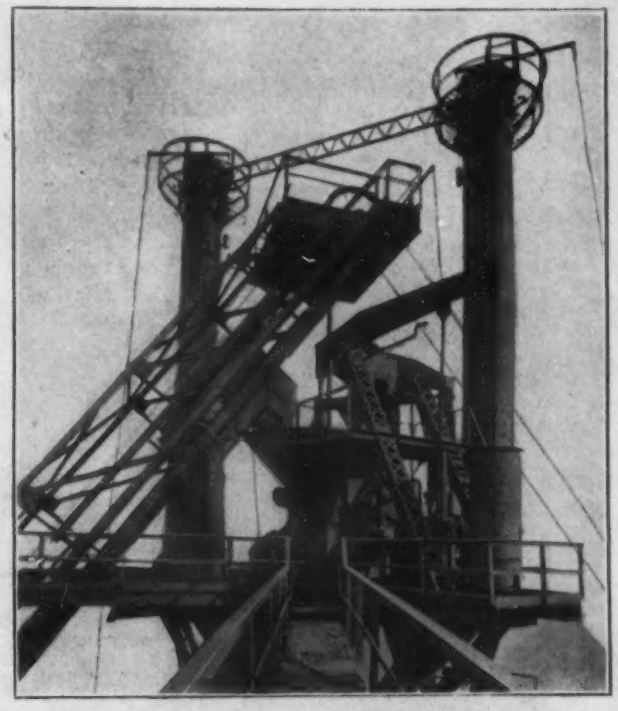


Fig. 4.—General View of Top Filling Mechanism.

The blowing equipment was supplemented by the addition of a pair of 44 and 84 x 84 x 60 in. Allis-Chalmers long crosshead engines and the power plant by a 250-kw. Allis-Chalmers dynamo direct connected to a Skinner high speed reciprocating engine.

Reinforced Concrete Dock

On account of the poor subsoil encountered at the necessary location for the dock and ore floor, very heavy construction was determined on for this portion of the plant. The dock proper is of reinforced con-

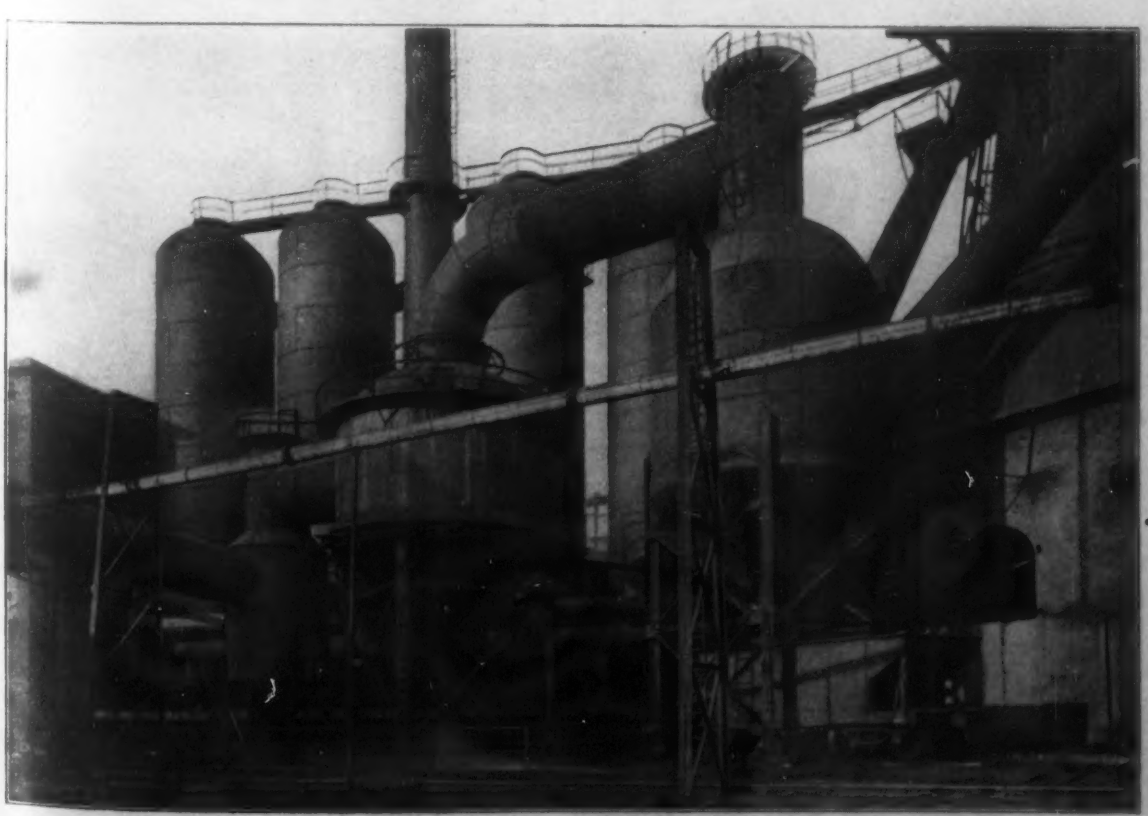


Fig. 5.—Dust Catcher and Mullen Gas Washer.

Fig. 6.—Ten-Ton McKee Type Scale Car Under Ore Bins.—Coke Bins at the Left.

crete, and is composed of two reinforced concrete girders of I-beam section, supported on a double row of piling and so spaced as to form a support for the front shear leg rails of the ore bridges. The girder sections are interconnected at suitable intervals by reinforced concrete girders and by a 6-in. reinforced concrete slab forming a floor between the upper portions of the girders. This slab extends as a cantilever at the front of the dock and is supported by reinforced concrete knee braces attaching to the front girder. The ore floor is a reinforced concrete slab supported on piling. Piles were spaced on 4 ft. centers over the entire floor, the reinforcing of the slab and spacing of piling being proportioned to an ultimate load of 6800 lb. per square foot. The ore floor is tied into a reinforced concrete girder at the rear, the girder supporting the rear shear leg rail of the ore bridges. The piling driven to support the ore floor varied from 30 to 45 ft. in length, and that supporting the dock proper from 40 to 55 ft. in length.

After the plant was completed it was decided to install a single strand Uehling pig casting machine for the purpose of giving the plant a range of product, including basic iron. The location of the machine is indicated on Fig. 1.

The designing and construction of the new furnace were under the supervision of Arthur G. McKee, consulting engineer for M. A. Hanna & Co.

The Marshall Foundry Company Secures a Government Contract.—The Marshall Foundry Company, Twenty-eighth street and Allegheny Valley Railway, Pittsburgh, has secured an important contract for pipage castings required in irrigation work. The plans as prepared by the Los Angeles office of the United States Reclamation Service of the Department of the Interior provide for special cast iron tunnel shaped pipe, of which there will be 11 sections, the largest having inside dimensions of 8 ft. wide and 7 ft. high, each section being 12 ft. long and weighing about 30,000 lb. All flanges are to be machined in the machine shop of the company. The complete contract includes steel grillage bars and I-beams and will take about three months to finish, after which shipment will be made to the new Belle Fourche project, S. D. The Marshall Foundry Company has excellent foundry and machine shop facilities for such work, one notable contract taken a few years ago having been for large cast iron pipe and fittings for the League Island Navy Yard, Philadelphia. The company is also completing an important contract for 36 large cast iron acid stills for the Aluminum Ore Company, East St. Louis, Ill.

Ellwood City and Its Industries

Ellwood City, one of the new manufacturing towns promoted in the Pittsburgh district within the past 15 years, is located in the southern part of Lawrence County, Pa. Its growth has been steady and substantial, year after year, until it has become of industrial importance, with much promise for the future. It now has two seamless tube plants, factories A and B of the Shelby Steel Tube Company, factory A being the largest seamless tube plant in the world, employing, when in full operation, about 1600 hands. It also has two steel forging works, one employing about 700 hands; two foundries and machine shops; a wire drawing and nail factory, and a number of other manufacturing establishments.

The promoter of the town, the Pittsburgh Company, has always encouraged the location of manufacturing interests and is at the present time offering factory sites free to legitimate enterprises. This company calls attention to the excellent railroad facilities enjoyed by the town, its cheap electric power, perfect sewerage system, immunity from floods, freedom from labor disturbances, abundance of native coal and natural gas, and its public improvements, all of which would seem to make it a desirable manufacturing location.

The final figures of the corn crop of this year, as estimated by the Department of Agriculture, place the yield at 3,121,381,000 bushels. This is considerably above the estimate of October 1 and far above the yield of any other year.

The Belgian Machine Tool Market*

Its Industries and the Field for American Products

BY CAPT. GODFREY L. CARDEN.

The Belgian machine tool industry is one of the most important in Europe. This applies both to imports and exports. Belgium is supplying many parts of the Continent with a varied line of machinery for making machinery. Many of these Belgian tools compete strongly with leading grades of German products and Belgian prices are, in many cases, sufficiently low to insure sales in German territory. Broadly speaking, the best grades of American machine tools are not excelled by the Belgian output, but the fact must not be overlooked that there are good Belgian lathes on the market which are underselling some of the lowest priced lathes of American origin.

Belgian Machine Tool Builders

The city of Liége may be regarded as the center of industrial activity in Belgium. The machine tool houses of de Longdoz, Fetu-Defize and Jaspar are located there, and at the time of the writer's visit last year all three plants were busy. In Brussels the Demoor Works are engaged in the sole manufacture of lathes, and just outside of Brussels, in the village of Loth, is located another lathe building plant known as Le Progrès-Industriel. In Ghent is the machine tool plant known as Phœnix Noveau, and this last-named works is probably supplying a greater variety of cheap tools than any other Belgian establishment. Jaspar of Liége is confining his attention largely to plain milling machines of the Lincoln type, and the writer found many of these machines in leading arsenal shops. The Pieper Gun Works of Liége gave a large order to Jaspar for these small milling machines, and the firm appears to have been highly successful in placing orders in Italy, Denmark and elsewhere.

The de Longdoz Works are devoting attention to a large variety of tools, and are catering especially to machines for locomotive work. The design of many of these machines is excellent and the workmanship highly creditable. The writer devoted considerable time to the inspection of this plant, and has little hesitancy in saying that many of the de Longdoz tools are worthy of serious consideration.

The Demoor Works of Brussels is one of the few Belgian shops which is specializing. M. Honoré Demoor stated that he is building all lathes in series of 20, and had found it well-nigh impossible to compete in price with the American F. E. Reed lathe until his shops were put on a specialty basis. The Demoor Works was selling its No. O machine for 1800 francs ($347.40) last year. This machine has a hight of center of 220 mm. (8.57 in.); swing in the gap, 610 mm. (24 in.); width in the gap, 300 mm. (11.8 in.); swing over the bed, 440 mm. (17.3 in.); swing over the carriage, 310 mm. (12.19 in.); the weights varying from 1500 to 2040 kg. (3310 to 4500 lb.). The Demoor Works found on attempting lathes without reference to series that there was involved a cost of $250.90 per tool. By having recourse to American machines and turning work out in lots, the cost was reduced to $154.40 per tool.

*Similar articles by Captain Carden on Austria-Hungary appeared in *The Iron Age* March 31 and May 12, 1910, and on Russia June 16, 1910.

Fig. 1.—The Assembling Department of the Cockerill Works, Liége, Seraing, Belgium.

Labor is cheap in Belgium, and good machinists can be employed on an average for 5 francs (96.5 cents) per day. A day's work is generally 10 hours, and when orders are plentiful Belgian manufacturers are found extending this time to 11 hours. An average rate of pay for foremen is $57.90 per month. Belgium has long been regarded as one of the greatest supply centers of the Old World for almost all classes of machine made products. Belgian locomotives are not only of excellent design, but are regarded as generally presenting the most advanced features in steam practice. This summary applies particularly to the Continent, and if the statement requires any qualification, it must be in the interest of Austrian shops. The writer does not mean that the Belgians and Austrians are turning out the best locomotives in Europe to-day, but rather that Belgian and Austrian engineers have been early looked to for the latest in locomotive designs abroad.

There are three well-known plants in Liége engaged to-day in locomotive work; namely, the Meuse Works, St. Leonard and the great Cockerill plant, the assembling room of which is illustrated in Fig. 1. Cockerill is to Belgium what Krupp is to Germany, Le Creusôt to France and Witkovitz to Austria. It is easier to make a comparison between Cockerill and Le Creusôt than between Cockerill and Krupp. While all three establishments are essentially iron and steel works, Krupp's outputs are confined to iron and steel forgings, artillery, railroad material and shafting. At the Cockerill and Le Creusôt works all of these materials are also manufactured, but in addition, both build locomotives and steam engines. In the case of Cockerill, the noteworthy feature is the production of large gas engines.

In this Liége district there is a noteworthy plant known by the name of Ateliers F. Recq de Malzine, but it is popularly referred to as the Malzine Works. There are perhaps not more than forty men in this shop, and the efforts of the plant are confined exclusively to turning out gears. Except at the Melnotte Works, there is probably no finer aggregation of machine tools anywhere in Belgium than on the Malzine floors, and with only a few exceptions, these tools have been drawn from the first makers in America. The assemblage is tantamount to an exhibition display, coupled with a scrupulous regard for order and cleanliness. Belgian machinery works, and especially those of Liége, find it decidedly to their interest to turn their gear work over to Malzine, and, in consequence, the latter shops are fully employed. The tools in use by Malzine are representative, for the most part, of the most expensive machines on the American market, and this fact should not be lost sight of as indicating the readiness of Belgian manufacturers to buy machine tools on merit.

In a country where so many varieties of cheap tools are procurable, as in Belgium, it is little short of folly for American manufacturers to hope to do business there, unless their machines possess marked superiority. Where merit is the underlying consideration, the question of price no more controls in Belgium than elsewhere. As a further illustration, attention is called to the Melnotte Works in Remicourt, a town about 45 minutes on the railroad from Liége. M. Melnotte established a plant there some few years ago, which is practically out in the open country, Remicourt being a mere village. The workmen, it is understood, are largely drawn from the country class, and because of the location of the plant, there is an absence of city influence. The Melnotte Works are engaged in the manufacture of cream separators, a group of which are shown in Fig. 2, and the installation of machine tools is probably the best single grouping in all Belgium. Fully 90 per cent. of the tools are of American origin, this proportion representing for the most part the highest grades obtainable in the United States.

From the machine tool standpoint, there is nothing better to be seen in Belgium than the Melnotte dis-

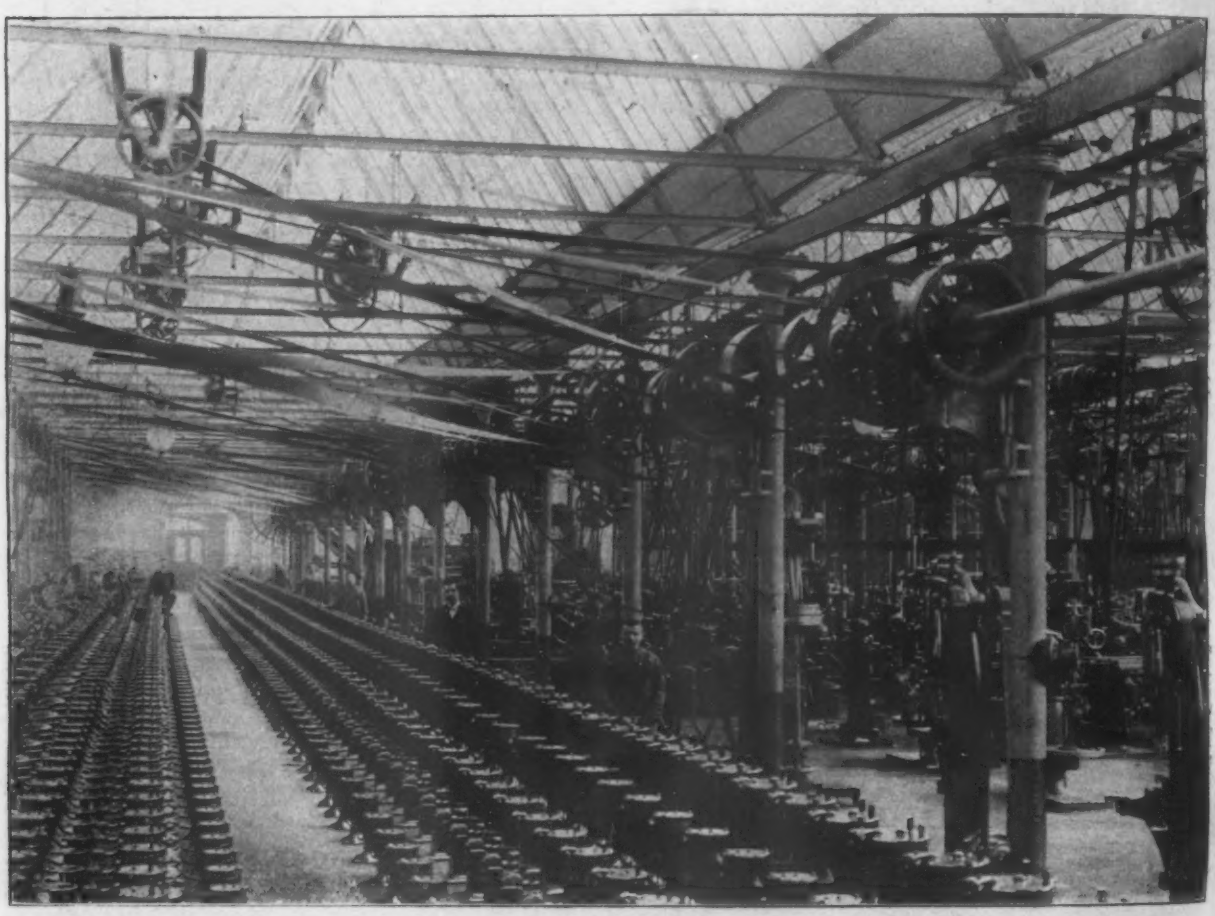


Fig. 2.—Inspecting Cream Separators Made at the Melnotte Works, Remicourt, Belgium.

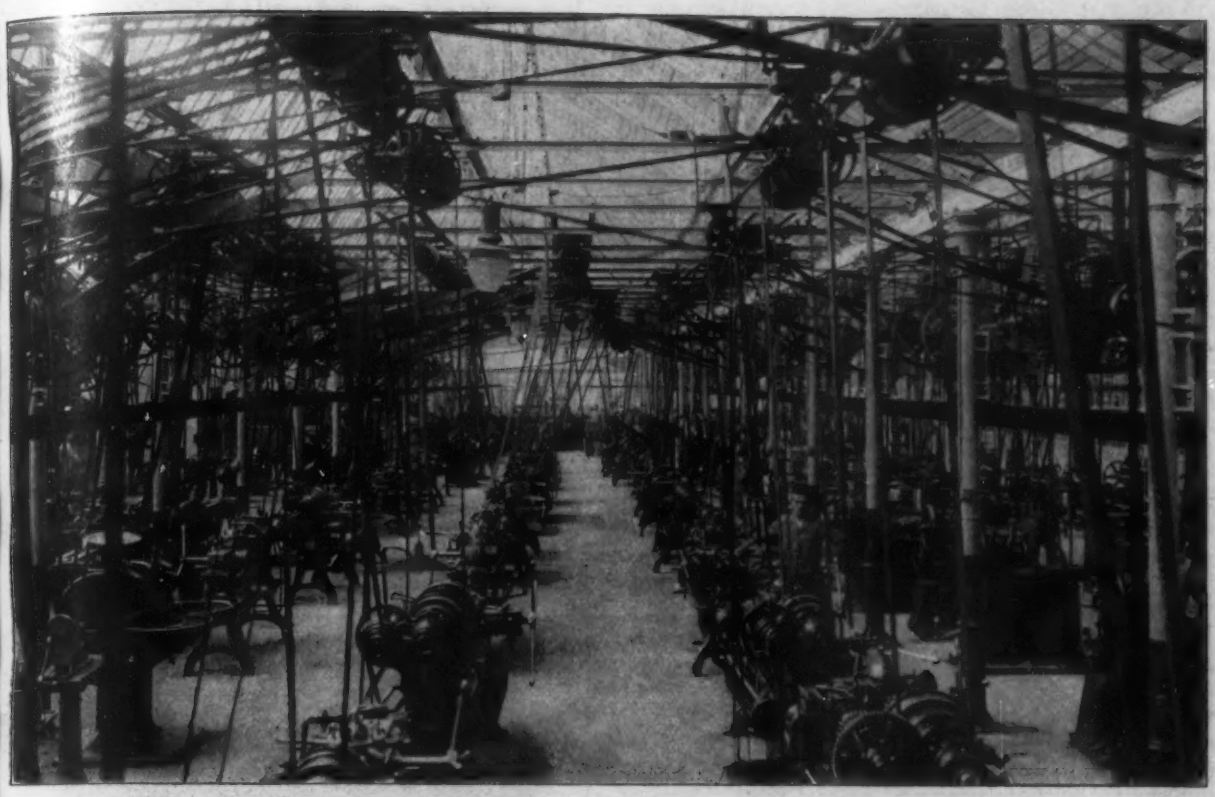


Fig. 3.—View Showing the Installation of Machine Tools at the Melnotte Works.

play, a partial view of which is given in Fig. 3. The annual output of separators approximates closely to 21,000 machines, and about 35,000 are said to be in actual use in Belgium. The methods employed in the Melnotte shops are patterned after the most advanced American practice, and Melnotte has carried the American idea so far as to incorporate American furniture in the offices. All machines turned out by Melnotte are guaranteed for two years, and the machine work on these separators is of the most exacting character. It is needless to say that there is a very large recourse to jigs in this plant, and the output speed is exceedingly high. Melnotte has not only adopted American standards and is using American machine tools, but has trained a highly efficient body of workmen. On these lines he has practically all the advantages of an American plant, plus the further advantages afforded in a country where the wage scale is low.

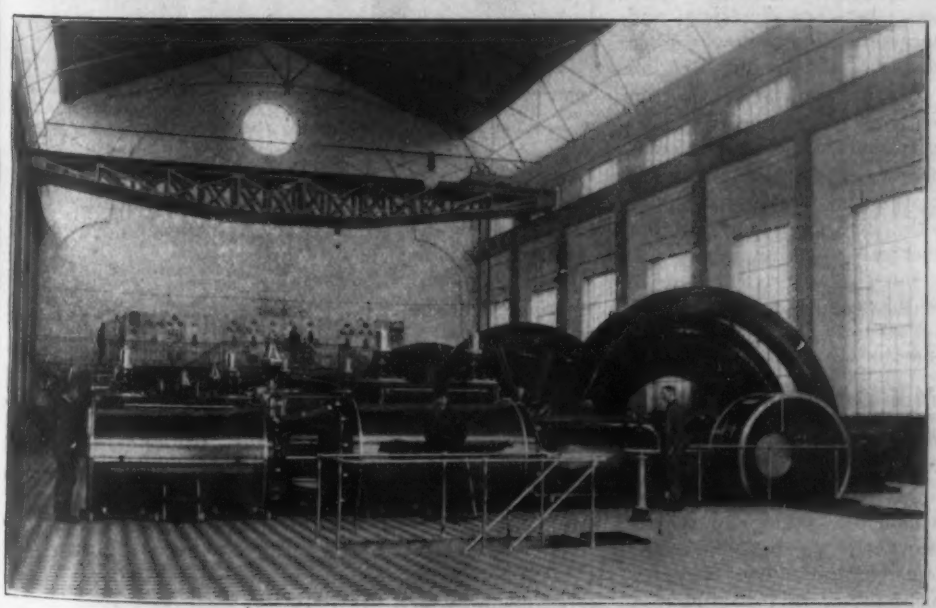


Fig. 4.—The Antwerp Tramways Power House, Showing Four 1000-Hp. Tandem Engines Built by Carels Frères, Ghent, Belgium.

Engine Building Plants

Attention has been called to Malzine and Melnotte as plants in Belgium where high-grade machinery is demanded. There are many others. To be sure, these two shops are engaged in a special class of work, demanding special tools of high development, but there are numerous shops in Belgium where the outputs rank among the first in Europe, and such shops are in the market at all times for the best machines obtainable. In the steam-engine building line, the works of Carels Frères, Ghent, have a world-wide reputation. There are quite a few American machine tools in the Carels shops, but not as many as one would expect to find in a plant of its high reputation. This establishment takes pride in its specialty of building engines required to run continuously day and night without a stop for, say, three months.

The Carels are generally regarded as the pioneers in Belgium in the building of superheated-steam engines, and an installation of four-tandem engines is illustrated in Fig. 4. Their experience shows that an engine with a steam consumption of 14 lb. of saturated steam per indicated horsepower requires only 9¼ lb. of superheated steam. The guarantees given for superheated-steam engines are 8½ lb. per indicated horsepower for triple expansion engines, 9¼ lb. for compound engines, 13 lb. for single-cylinder condensing engines; and 15½ lb. for single-cylinder noncondensing engines. All these engines are made with drop valves which are regarded by the firm as the only type suitable for superheated steam.

A guarantee is given on these drop valves for twenty years.

Lately, this company has brought out a new type of engine in which the efficiency of the steam jacket is increased by dividing the cylinder in three parts, and putting the valves in the cylinder cover. The Carels claim the advantages of higher efficiency of the jacket, direct and shorter steam passage, giving little resistance and rapid valve closing until passage of their overlapping and afterwards braking resistance for this arrangement which enables the construction of valves free from unequal expansion with their seats and thus remaining perfectly tight.

The Carels are also building locomotives and their output is practically all absorbed by the Belgian State Railways. This firm is also building Diesel motors but the fact should not be forgotten that they are essentially steam-engine builders. It was of this firm that a prominent American steam-engine builder declared, after inspecting all the steam-engines at the Paris Exposition, that in his opinion the best engines on exhibit were from the Carels of Ghent; Sulzer of Wintertur, Switzerland; and Tosi of Legnano, Italy. The Belgian engines are high priced, but when one considers the workmanship involved it is only natural for the products to command a high figure. In the writer's opinion there are probably no better castings put into engines anywhere in Europe than at Carels, and it is the practice of some of the French locomotive shops to draw on the Carels for various cast parts.

In Brussels the Bollinck Works are engaged in engine building much on the lines of the Carels, and an English writer declared not long ago that he doubted if the workmanship of the Bollinck engines was equaled by more than two British engine firms. In the Bollinck shops operators at machine tools are paid wages varying from 40 to 55 centimes (7.7 to 10.61 cents) per hour. A foreman in charge of from 10 to 15 men receives $42.46 per month. There are many American machine tools in the Bollinck shops, and correspondingly few German tools. This firm appears to have confined its installation to tools from the United States, Belgium and the United Kingdom.

On the subject of prices as between American and English heavy tools, the interesting statement was made by the technical director of one of the leading Belgian works that he had made a careful calculation based on the prices paid for machines from a well-known American and a prominent English house and his calculations showed that the prices charged per kilogram were practically the same. This statement related to heavy boring mills. And the director remarked that on the face of it the American machine would appear to be more expensive but the difference in price he found was made up by the greater weight in the American tool.

The American Rolling Mill Company's Research Laboratory

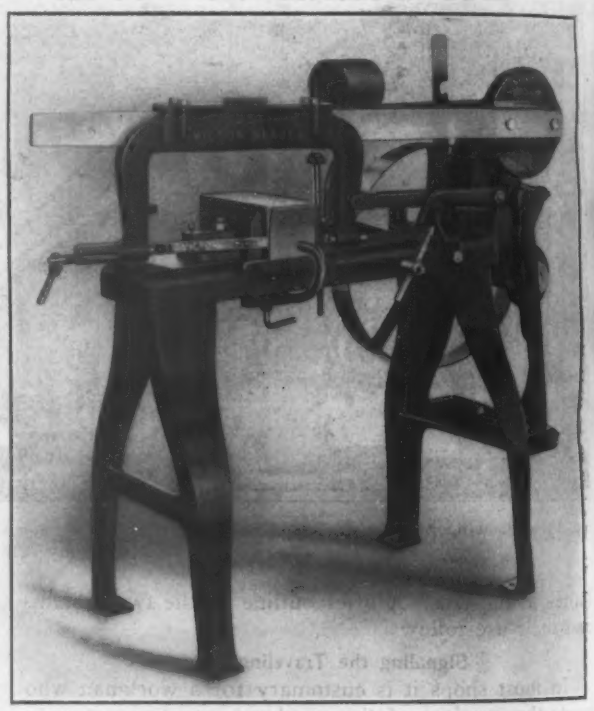
The American Rolling Mill Company, Middletown, Ohio, has just completed a splendidly equipped research laboratory costing approximately $40,000, and for which it has erected a special building. Every known appliance and all the apparatus modern ingenuity has devised that will, in any way, aid the company in its chemical and electrical development work have been included in this laboratory equipment.

The excellent organization that this company is known to have has been strengthened through securing the co-operation of Dr. Allerton S. Cushman, late of the Department of Agriculture, Washington, D. C., who is establishing an institute in Washington for scientific research work in several lines. The American Rolling Mill Company will especially benefit by such of his work as applies to every branch of the iron and steel business in which that company is interested. Under the arrangement effected Dr. Cushman will also give the work of the company's research laboratory personal supervision and direction. Under such able guidance, backed up by the laboratory above described and by the large modern new works now being built in Middletown, the company should certainly be in position to maintain its reputation in the manufacture of special high grade products in iron and steel.

Dr. Cushman's investigations of the causes of corrosion of iron and steel, have attracted much attention in both the metallurgical and commercial worlds.

New Massachusetts Power Hack Saw

A new power hack saw machine, known as the No. 6, has recently been added to the line made by the Massachusetts Saw Works, Chicopee, Mass. Particular care has been taken to make each part of the machine



A New Power Hack Saw Made by the Massachusetts Saw Works, Chicopee, Mass.

as accurate as possible and of high grade material and the tool is claimed to be especially rigid and strong, the frame being braced in two directions.

All side play and vibration are said to have been eliminated and a straight cut assured. The forward stroke is steady and even throughout its length of 6 in. and the cut is like the stroke of a man with a file. As is customary in tools of this character, the return stroke is at a higher rate of speed and the blade is lifted an amount varying from 0.001 to 0.125 in., a feature which saves wear on the teeth and increases the life of the blade. An adjustable stop regulates the depth of the cut, stopping the saw automatically when the desired depth is reached, so that no attention is required after the cut is started. A rest for the piece being cut off is furnished which prevents the saw blade from being broken when the stock is cut through.

Several requests have been received for unfolded copies of the Supplement to *The Iron Age* of October 20, 1910, reproducing the photograph of the participants in the annual dinner of the American Iron and Steel Institute, at the Waldorf-Astoria, October 14. In case other readers of *The Iron Age* desire to preserve this Supplement, unfolded copies will be mailed free on request.

Lodge & Shipley Shop Systems

BY H. M. WOOD,* CINCINNATI, OHIO.

Practically all machine shops, large and small, have some special features in the way of conducting work or handling their equipment. The Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, is no exception to this general rule, and a number of interesting arrangements are in use there. Two of these which deserve special mention are a system of lamps for signaling the operator of the traveling crane when his services are required in different portions of the machine shop, and the use of blackboards for posting shop order numbers for the information of the assembling force. Both of these features are shown in the accompanying engraving, which is reproduced from a photograph of a portion of the assembling floor. The crane signal lamps can be seen hanging from the roof in the center, while some of the blackboards are placed over the lathes at the left. A brief outline of the two systems and their use follows.

View Showing the Order Blackboards and the Crane Signal Lamps in the Shop of the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio.

Signaling the Traveling Crane

In most shops it is customary for a workman who needs the services of the overhead traveling crane to wave his arms and shout and whistle to attract the attention of the crane operator, and the noisiest man is generally the most successful. If the building is a long one it means a more or less extended trip down the floor to get within hearing distance of the crane operator, with consequent loss of time. By installing a system of signal lamps the time wasted in calling the crane has been eliminated and two traveling cranes are able to serve the center bay promptly, running the full length of the main machine shop, 680 ft.

Switches are placed at convenient intervals on the columns along the sides of the center bay, each controlling a red lamp hung from the ceiling directly over that portion of the floor. These lamps are all connected in parallel with the regular incandescent shop lighting system, although each is turned on and off by its own switch. When an erecting hand needs the crane he throws the switch nearest him, which lights the lamp over that portion of the floor. The crane operator is on the lookout for these signal lights and, if not already engaged, runs at once to the spot. If his crane is engaged at that moment he goes as soon as he is free. In either case the light remains burning until the crane reaches that point, when the erecting hand turns it off.

Posting Shop Orders

In common with other well regulated plants, we have our own shop order number for every job which enters the factory. An interesting method is in use to show at a glance what the various orders on the assembling floor are and the character of each. A blackboard 18 x 24 in. in size is hung above each lathe which is in course of construction on the assembling floor, just as soon as the bed is placed for the first operation. On this board are chalked the size of the lathe, its order number, the special attachments, if any, and the completion date.

The assembling work is divided among specialized groups and the data on the blackboard serve to keep prominently before each man the information necessary for his particular work. For example, those who align the headstocks know that they must complete their part of the work two weeks before the date chalked on the board. If a tool room lathe is to be fitted with a relieving attachment as an extra, it is plainly shown in black and white. Of course the same information is also given on the shop order tag which is wired to the lathe. The blackboard is merely an added convenience and timesaver, so that a person, even if a few yards away, can get the important particulars of the job at a glance.

* Lodge & Shipley Machine Tool Company.

The Sloss-Sheffield Company Passes a Dividend

The Sloss-Sheffield Steel & Iron Company's directors at their meeting November 9 passed the dividend on the common stock, which has been at the rate of 1¼ per cent. quarterly. In explanation the statement below was made:

Under ordinary conditions, either financial or otherwise, this company, notwithstanding its policy of providing for all of its improvements to its property without the issuance of additional securities would have made ample net earnings to pay dividends on all of its stock at the current rates and have available a substantial surplus. By reason of the flooding of the two slopes of one of the company's most important iron mines, the entire output of ore from this mine, for a period of eight or nine months, was unavailable for use. The ore from this mine contains sufficient lime to flux itself, and also 16 2-3 per cent. non-lime bearing ore, and the lack of this ore necessitated the shutting down of two of the company's furnaces and increased the cost of iron produced about $1.50 a ton. At great expense the water has been pumped out, and the mine is now in condition to be operated; but this unfortunate accident and the enormous loss, direct and indirect, occasioned thereby, coupled with the existing depression in the iron market (owing to which the company has accumulated 70,000 tons of iron in its yards), makes it seem to the board imprudent to declare this quarterly installment of dividend on the common stock.

The Pennsylvania Steel Company has blown out its No. 2 furnace at Steelton, Pa., and put No. 4 into operation after considerable improvements. The company is making about the same output as for several months past.

Gas Producer Design and Operation

Some Considerations Affecting Their Success

BY P. VON ZEIPEL, DUQUESNE, PA.

Nearly all of the modern gas producers have arrangements for admitting steam into the air supply. The quantity of steam used generally varies between 33 and 40 per cent. of the weight of the coal charge, but if it is desired to recover the by-product ammonia 150 per cent. of steam is needed. It is generally considered in the former case that one-fourth of the whole amount of coal is consumed by the oxygen in the steam. It is self-evident that a more efficient gas is produced by this method, as the percentage of nitrogen is reduced and that of the hydrogen increased, which may be desirable in certain cases. If the gas is intended for metallurgical purposes the hydrogen will no doubt have a deleterious effect, as it is shown in practice that the loss of iron through oxidation is proportional to the hydrogen which the gas contains. The steam will be reduced when in contact with the hot iron and hydrogen liberated according to the following equations:

$$4\ H_2O + 3\ Fe = Fe_3O_4 + 8\ H$$
$$3\ H_2O + 2\ Fe = Fe_2O_3 + 6\ H$$

The Fe_2O_3 generally escapes with the chimney gases and the Fe_3O_4 joins the slag. The ratio shows that the hydrogen is again delivered and at liberty to burn in regenerators and chimney flues, which naturally will cause unnecessary damage.

It is quite common to believe that the steam will dissolve the clinkers in the producer ashes, but this is hardly the way to put it. Heat is absorbed by the reduction of the steam, which lowers the temperature sufficiently, thus preventing the ashes from melting together. Clinkers are apt to accumulate if the fuel carries a high percentage of sulphur. Generally about 1 per cent. of sulphur is harmless, but any marked increase will produce conditions that are very trying. In the selection of coal great care should therefore be taken to provide against an excessive percentage of sulphur, rather than against a large percentage of ashes.

Operating Difficulties

The greater the clinking tendency of the fuel the slower the producer naturally must be run, so that the temperature in the combustion zone will not reach the melting point of the fusible matter. The intensity of the gas generation depends to a certain extent upon the size of the grate area; smaller generators, whose consumption of coal averages from 20 to 25 lb. per hour per square foot of the grate area, run to better advantage than larger ones, which generally burn only about one-half of this amount satisfactorily. The reason for this diversity is the greater difficulties in the satisfactory running of larger generators. In this connection it might be said that the most common sources of trouble in operation arise from irregular distribution of the charge and neglect of attendants to close up by poking the channels that are always formed in the fuel bed and which permit air to pass through too freely and partly burn the gas within the producer proper.

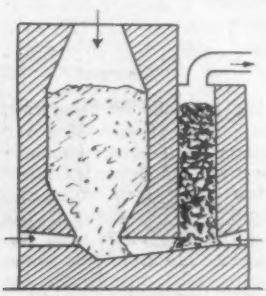


Fig. 1.—Ebelmen Producer, 1841.

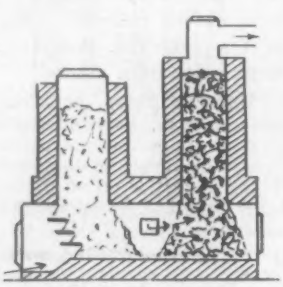


Fig. 2.—Riché Producer, 1902.

Two Producers Designed to Decompose Tar Forming Gases by Forcing Them Through a Layer of Coke.

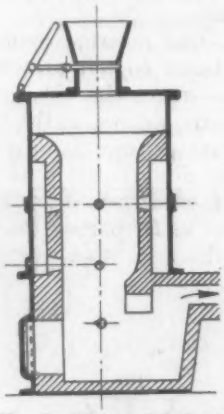


Fig. 3—Ekman Producer, 1843.

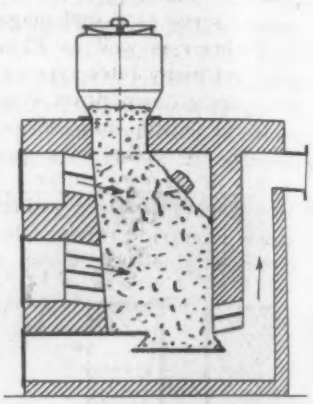


Fig. 4.—Koerting Producer, 1903.

Two Types in Which an Air Blast Is Used to Decompose Tar Gases.

This condition will also be present if the layer of coal is too thin or the gas generation too intense and the result will be a poor gas with a high percentage of carbon dioxide, low carbon monoxide and hydrogen and of high and varying temperature.

The loss through partially burned coal and coke in the ashes is often surprisingly large and is the result of an irrational manner of cleaning. Upon examination of certain producer types it will be found that only the outermost part of the ashes is removed and the cavity formed at this point will be filled with the nearest layer of coal and coke coming down along the sides and thus easily dropping into the ashes.

In order to obviate related difficulties and facilitate successful operation mechanical pokers are now coming into general use and through their action the air channels will be continuously destroyed, thus permitting the gas generation to be pushed, which means a reduction of the relative number of producers. The layer of coal, which formerly was kept relatively low on account of increased difficulty in poking, can now be higher, which is an important advantage. The outgoing gases thus have higher temperatures and a considerable percentage of available heat has been absorbed and returned to the fuel, which ratio will naturally increase the efficiency of the producer. The formation of clinkers is also reduced by mechanical agitation and continuous breaking up of the mass of fuel, thus making it possible to dispense with the use of steam if desired. With the introduction of mechanical pokers a decided step is taken toward the solution of the producer problem. In the final solution, however, the question enters of how to manage those condensable hydrocarbons if they are not wanted in their crude form.

Progress Made in Designing

As early as the beginning of the fourth decade of the last century Ebelmen in France and Ekman in Sweden built producers designed to disintegrate the tar forming gases and the ideas governing their construction are still fundamental. It is interesting to compare, for instance, the Ebelmen producer of 1841, Fig. 1, with Riché's of 1902, Fig. 2, and also Ekman's of 1843, Fig. 3, with Koerting's of 1903, Fig. 4. Ebel-

men and Riché decompose the tar gases by forcing them through an incandescent layer of coke, while Ekman and Koerting obtain the same result by admitting an air blast to the middle of the producer and having the gas outlet at the bottom. The gases are thus forced down through the combustion zone and the tarry vapors decomposed.

Ebelmen also constructed dry distillation producers, with the coal inclosed in a tube suspended from the top, Fig. 5. With this arrangement the tube also serves as a magazine for the charge, but, as Ebelmen also discovered, it is of very little use as regards decomposition of tarry hydrocarbons. The arrangement, however, is used quite extensively, though only with the view to serve as a fuel magazine.

Ebelmen as well as Ekman used inverted combustion and many later types are based on this principle. The purely down draft system—where the air is admitted at the top and the gases are led out at the bottom—has nevertheless a disadvantage, especially when applied to large producers. The decomposition of the tarry vapors and the reduction of carbon dioxide to carbon monoxide refrigerates the under part of the incandescent fuel bed, which results in a large waste of

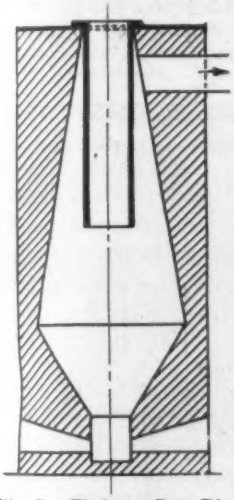


Fig. 5.—Ebelmen Dry Distillation Producer, 1840.

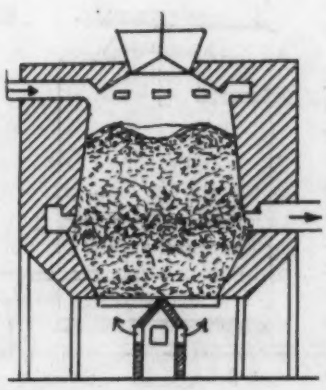


Fig. 6—Gorman Double Zone Producer, 1877.

carbon going into the ashes. The most intense combustion occurs about 2 ft. below the surface of the fuel bed and clinkers are therefore generally formed at this point. The removal of these clinkers is in some instances so difficult that the producer must be blown out to permit cleaning. As a consequence the ashes and clinkers are allowed to accumulate until the efficiency of the producer ceases, which usually occurs after three to ten days' time. Then the entire contents are removed and the process started anew. This, of course, means that the remaining producers have to be forced in a corresponding degree, until the new fire has been started, if the original quantity of gas is needed.

In order to combine the best features of both down draft and up draft producers Gorman, in 1877, designed a double zone type with two distinct zones of combustion, Fig. 6. In the upper zone the distillation products are decomposed and in the lower one the combustion of soot and coke takes place. The gases from both zones are mixed at the middle part of the producer, where the gas outlet is located.

The idea of conducting the distillation products through channels to the zone of combustion has been accomplished by Neshe in his construction of 1879, Fig. 7. The object was modified by Olschewsky in 1881, through the use of a suction apparatus under the grate, Fig. 8, and further improved by Genty in 1901, in whose construction the gas and the air blast are kept separate, thus eliminating the danger of explosion. In his construction the gases are admitted directly on a higher level to the zone of combustion, Fig. 9.

Reversible producers, built in pairs and first designed by Sutherland in 1882, Fig. 10, produce a good tar free gas. The operation is performed in the following manner: The charge in generator No. 1 is sup-

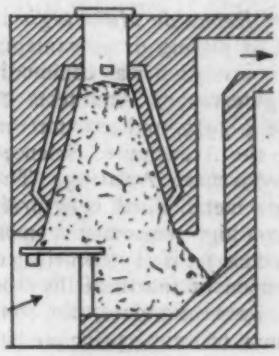


Fig. 7.—Neshe Producer, 1879.

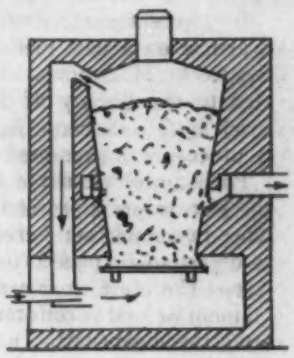


Fig. 8.—Olschewsky Producer, 1881.

posed to have parted with its products of distillation and is consequently at a high temperature; generator No. 2 is now charged with a fresh supply of fuel and the gases, together with their tarry vapors, are admitted into generator No. 1, where the hydrocarbons are decomposed by passing through the incandescent fuel bed. As soon as the charge in generator No. 2 is thoroughly coked and incandescent, the process is reversed by valves, thus changing the direction of the gas and the air currents. The reversing of the valves can be accomplished automatically and at fixed intervals by proper adjustment.

The distintegration of the tar gases in all these producer systems seems, however, to deprive the combustion zone of such a quantity of heat that the carbon dioxide is to a great extent not decomposed and therefore the efficiency of the producer is considerably reduced. The volatile matters, distilled from bituminous coal, form soot at a high temperature of distillation and tarry hydrocarbons if the temperature is relatively low. It seems, therefore, very probable that in the ordinary up draft producer a medium temperature exists, in which the products of distillation form neither soot nor tar vapors, but are passing off as fixed gases. This ratio can, however, only be obtained by a continuous and even distribution of the charge, which can

Fig. 9.—Genty Improved Producer, 1901.

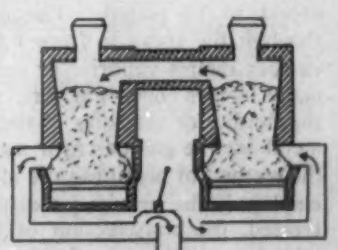


Fig. 10.—Sutherland Reversible Producer, 1882.

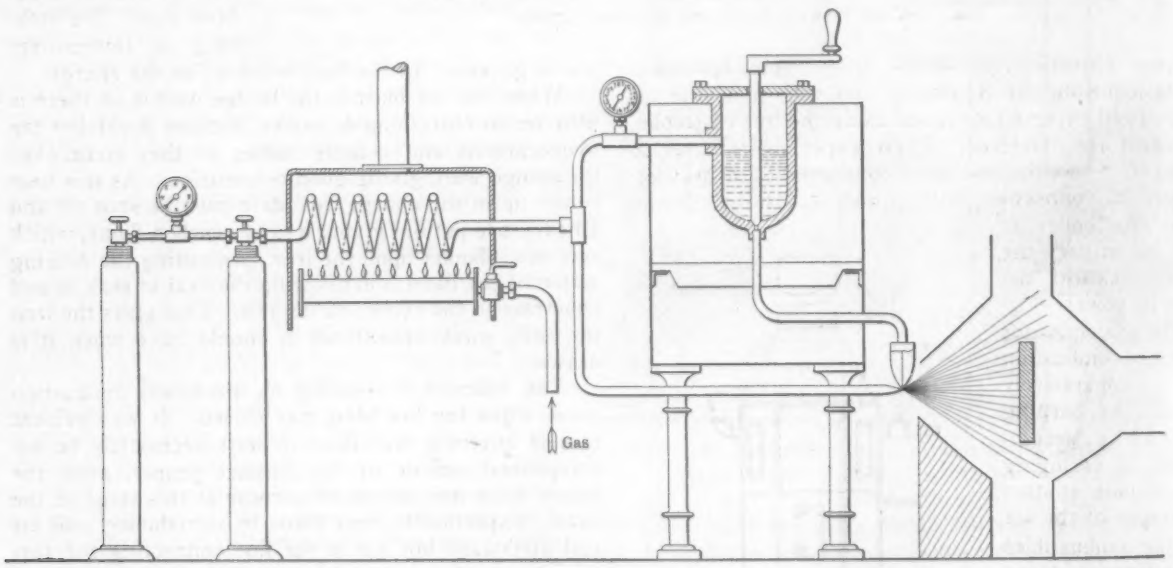
be more readily performed by automatic feeding devices.

If the coal consumption amounts to 100 tons per week or more, it will be of a greater advantage economically to have ammonia recovery apparatus in connection with the gas plant. The gas generation must then take place at such a low temperature that there will not be any decomposition of tarry hydrocarbons. The idea of washing them away by water seems very efficient, especially as this can be accomplished at such a high temperature that the ammonia vapors are not condensed; but the valuable ingredient can be recovered by a simplified method.

A New Method of Plating or Galvanizing

In a recent number of *La Revue de Metallurgie* is an article on a new method of plating or galvanizing invented by M. Schoop. This invention was communicated to the Society of Engineers and Architects of Zurich by Mr. Schoop, April 3, 1910, and a report on the process was presented to the Academy of Sciences of Paris by Professor d'Arsonval on April 19. The process consists in projecting a metal, which is by preference in a liquid state and at a high temperature, upon the object to be plated, in a fine jet or by centrifugal force. The state of fine division of the metal can be obtained in many different ways and does not constitute the invention. The new technical principle involved is the discovery that by means of finely divided liquid metal it is possible to produce a dense metallic coat that can be worked and that is either adherent or may be separated.

One possible arrangement is shown in the diagram. The molten metal is contained in a crucible, into which a suitable gas is admitted under pressure. The metal is forced down a capillary tube, is broken up by a stream of the same gas and blown in the form of a metallic mist or spray, with great force, against the object to be plated. The object is caused to pass through the spray in from 1 to 3 seconds. Of course, various metals vaporize or spray in different ways and many factors come into play, such as the melting point, the fluidity or viscosity of the metal, the affinity of the metal for the gas or vapor used as a spraying medium, the method of obtaining the metallic spray, the pressure employed, the previous treatment of the object to be treated, the construction of the apparatus and many operating conditions. In using aluminum, for instance, the crucible must not be of steel or iron or siliceous material, because of the action of aluminum on these materials.



Apparatus Employed in the Schoop Method of Metal Coating.

The deposits of pure tin vaporized by means of a pure and inert gas are distinguishable with difficulty from mercury or silver mirrors. The specific gravity of the deposit is equal to that of the forged or rolled material, showing its density. A very interesting fact is that the temperature of the metallic mist or spray is very much lower than that of the molten metal, so that substances such as wood, celluloid and organic bodies can be treated.

The surfaces to be treated should of course be freed from dust and grease, and if they are heated the coating is more tenacious. Tin plate produced by this new process has stood 10 to 12 bendings before breaking and the tin did not scale off. The fields of application of the invention are only touched upon briefly. They fall mainly into two divisions: First, the production of thin and adherent metallic deposits for the decoration or protection of surfaces; second, the production of removable deposits for printing. The coating of insulating bodies to make them conductors and the production of parabolic or other mirrors do not fall properly under either class.

G. B. W.

The Philadelphia Foundry Foremen

The regular monthly meeting of the Associated Foundry Foremen of Philadelphia and vicinity was held in the Odd Fellows' Temple, Philadelphia, on the evening of November 8. The annual election of officers resulted as follows: Clarence R. Brown, E. E. Brown & Co., president; Joseph Whitehead, Abram Cox Stove Company, vice-president; George M. Benkert, Fairmount Foundry Company, treasurer, and D. M. Kittenger, Pencoyd Iron Works, secretary. Thomas M. Livezey, Haines, Jones & Cadbury Company, Norristown, Pa., was elected trustee, to serve three years. George C. Davis was re-elected official chemist of the association. The trustees were empowered to arrange for removing the headquarters of the association to the Manufacturers' Club. F. Sutcliffe, Norristown Pattern Company, Norristown, Pa., was elected to membership.

The programme for the evening provided for a debate on "Molding Machines vs. Hand Molding." Various members participated. While hand molding was strongly defended for some classes of work, machine molding was claimed to be better adapted for others. Referring to the relative output by hand and machine, one speaker said that if the hand molder was given the same care in preparation of patterns and general equipment as was given the molding machine, the relative production would not be at such variance. The judges of the debate (Thomas Devlin, Josiah Thompson, J. Howard Sheeler, Carlisle Mason, and J. Howard Evans) reserved their decision and advised that, as the information brought out was so interesting and valuable, the debate be continued at the next meeting.

The Western Steel Corporation, Seattle, with steel plant at Irondale, Wash., now has two mills running double turn, while a third train of rolls is on its way from the East for installation as soon as received. It is manufacturing merchant bars and twisted bars, and will soon be turning out angles, channels, I-beams and other structural shapes and light rails. It is also completing a plant for the manufacture of horseshoes.

Smoke Prevention

A Solution of the Problem for Heating Furnaces in Iron and Steel Working Plants

BY H. M. NICHOLLS, CHICAGO, ILL.

The difficulties encountered in solving the smoke abatement problem are many and the plants which come under the jurisdiction of the Smoke Inspection Bureau realize the necessity, both to themselves and the smoke inspector, of some satisfactory means to eliminate objectionable smoke from their furnaces. In the following the conditions met with in plants of the kind and experiments made along the line of smoke abatement are described. These experiments cover a period of 18 months and were conducted on a heating furnace in connection with which a 250-hp. Hyde water tube boiler is used to utilize the waste heat of the gases for power.

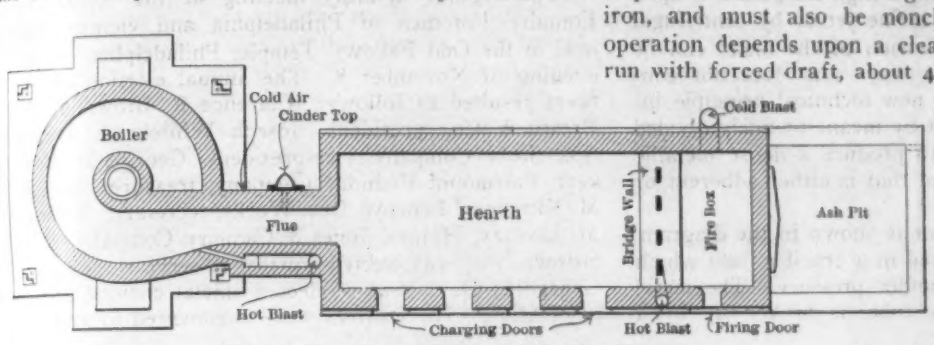


Fig. 1.—Plan View of Boiler and Heating Furnace.

The principles of perfect combustion are comparatively simple. The burning of coal is accomplished by bringing into intimate contact the oxygen of the air with the combustibles in the furnace under proper conditions of temperature. The main factor and the key to the problem is the proper amount of air intimately mixed at the right place and temperature with the burning carbon and volatile matter. Unfortunately these ideal conditions do not exist in heating furnace practice. The efficiency of a heating furnace is measured by the tonnage of good iron produced, and such things as fuel and smoke are of less concern to the furnaceman.

A brief description of a heating furnace and an outline of the practice will help to emphasize the difficulties of smokeless combustion in a furnace of this type. Referring to the line drawings, Figs. 1 and 2, a heating furnace with four charging doors is shown in sectional plan and elevation. The iron is charged either in the shape of billets or fagot piles. The latter are composed of small pieces of scrap iron wired together, while the billets are solid, having been rolled down to size from ingots or blooms. The iron is charged through the charging doors upon the hearth of silica sand. This hearth is 7 ft. 6 in. wide and 16 ft. 9 in. long and is separated from the firing chamber by a high bridge wall. The charge is brought to the proper temperature by the reverberatory action of the flame. The grate surface required in a furnace of this size is 30 sq. ft., with 24 in. as an average depth of fire.

The fuel used must essentially be a long flaming coal, due to the long hearth, and must be free from sulphur to allow the welding of the small particles of iron, and must also be nonclinkering coal, as good operation depends upon a clean fire. The furnace is run with forced draft, about 4 oz. pressure being carried under the grates. The bridge wall is hollow, with ports on top through which a hot blast is introduced into the furnace. Each furnace requires 30 to 35 tons of coal in a 24-hour run. The stoking is intermittent and is governed by the heat required by the charge.

When the hot blast in the bridge wall is on there is little or no objectionable smoke, because it catches the hydrocarbons and volatile matter as they come over the bridge wall, giving good combustion. As this heat comes up in the charge this blast must be shut off and a heavy fire put on, giving a heavy carbon flame, which acts as a blanket upon the iron, preventing the rashing action of the flame and allowing the heat to soak in and penetrate to the center of the pile. This gives the iron the soft, waxy appearance it should have when it is drawn.

The difficulty in securing the smokeless combustion arose when the hot blast was closed. It was evident that if anything was done it must necessarily be accomplished outside of the furnace proper, after the heavy flame had served its purpose at this stage of the heat. Experiments were made by introducing cold air and afterward hot air in the flue connecting the furnace and boiler, but the velocity of the gases was so great, owing to the contracted area of the neck and setting, and the distance so short, that the carbon did not get its proper amount of oxygen before striking the cooling surface of the boiler tubes.

The original boiler setting is shown in section in Fig. 3. After careful study of the conditions it was decided to design the boiler setting as shown in Fig. 4.

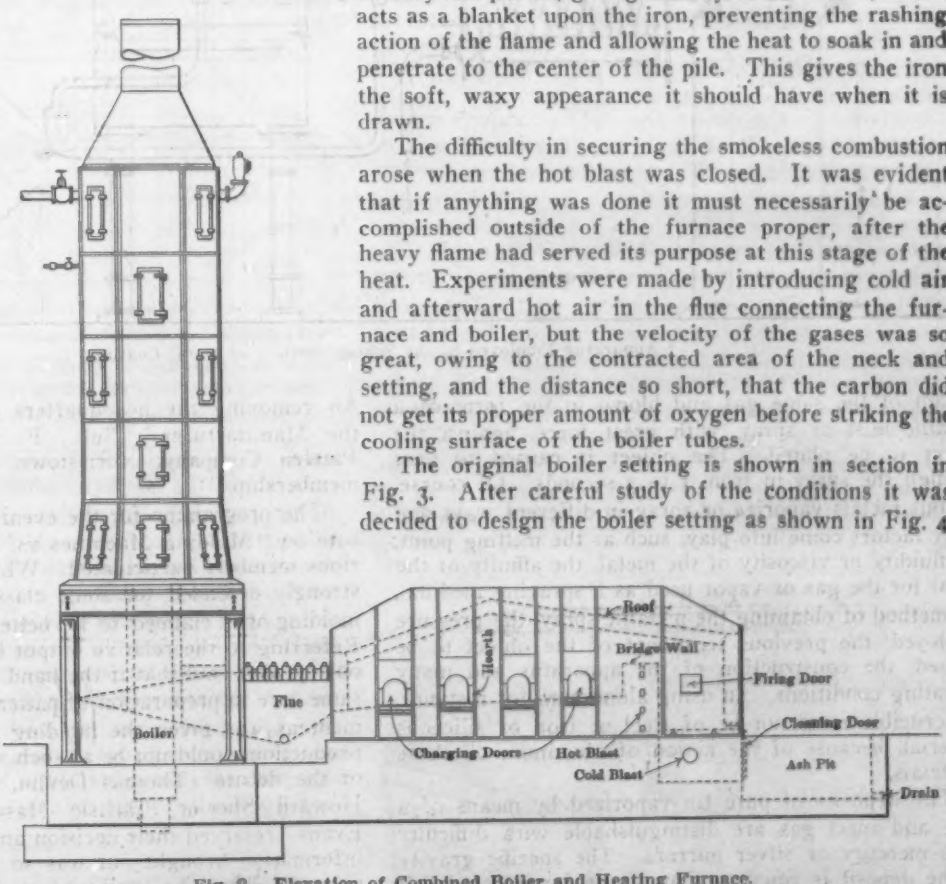


Fig. 2.—Elevation of Combined Boiler and Heating Furnace.

Three feet were added to the length of the central column, raising the tubes higher. The width of the circle was increased from 22 to 38 in., the distance for gases to travel lengthened from 7 to 17 ft., and a hot blast was introduced into the flue in the direction of travel of the gases.

The results obtained showed this to be a highly satisfactory and, in the opinion of the writer, the cor-

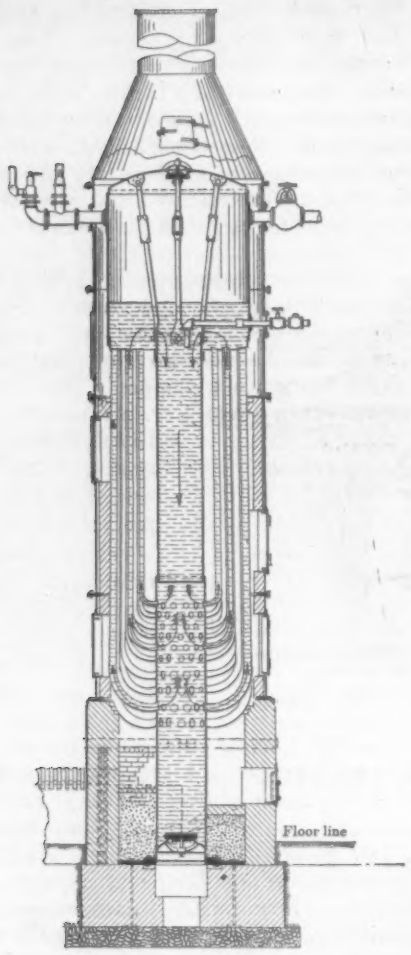


Fig. 3.—Original Boiler Setting.

rect solution of the smoke problem in connection with heating furnaces. With slight modifications it may be used in connection with any waste heat proposition. For auxiliary power purposes 72 in. by 18 ft. horizontal return tubular boilers are used. These boilers were incessant smokers until the setting was changed. The combustion chamber was deepened and smoke arches installed and also a hollow bridge wall. The air is forced through the bridge wall, becoming heated to a high temperature before leaving the ports, when it is mixed with the gases as they are deflected by the smoke arches. This type of setting makes it possible to force the boilers and burn much poorer fuel without making any objectionable smoke. The solution seems, and is, simple, but much study and money were involved in solving the problem, and the writer hopes it may help clear the atmosphere in localities around the

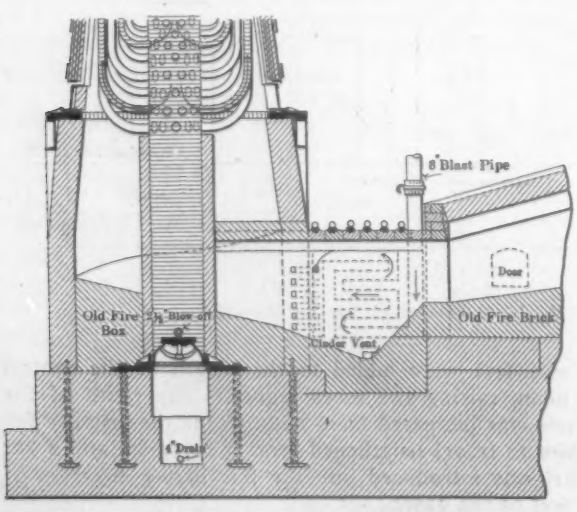


Fig. 4.—Lower Portion of Boiler Showing Modifications in Setting.

many plants of this character. All that is achieved in this and kindred lines should be chronicled for the good of the cause.

Strength and Size Tests of Manila Rope

Some interesting figures on the variation in the size and strength of 3-in. Manila rope have been obtained as the result of a series of tests conducted by the Plymouth Cordage Company, North Plymouth, Mass. A sample of the company's manufacture was used as a standard for both strength and size and the percentage variation from this of the 22 samples of other makes tested were plotted with the results shown on the chart reproduced herewith.

One of the samples tested for size was 3-in. in circumference, the nominal size, while three were smaller and the balance were larger. The maximum variations were 10.3 per cent. over and 7.3 per cent. under size with an average of 3.1 per cent. over the standard. The deviation in size as shown by this set of samples made by different rope makers and presumably of the best quality is very striking but not as much so as in the case of the strength tests.

In this latter series of tests there was a much greater variation shown and there seems to be no relation between these variations and the differences in size. The strength of the Plymouth specimen used as a standard was 8795 lb. and only two of the samples exceeded this

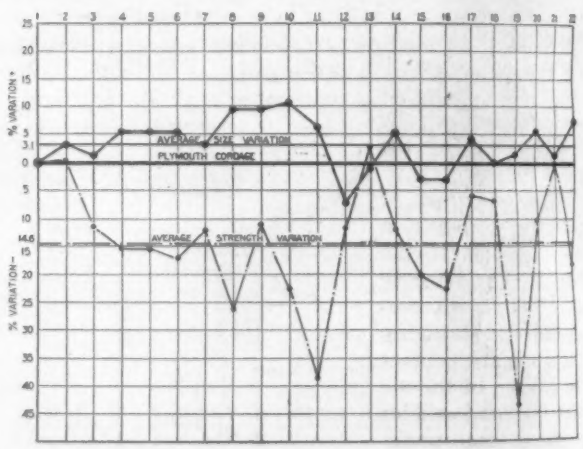


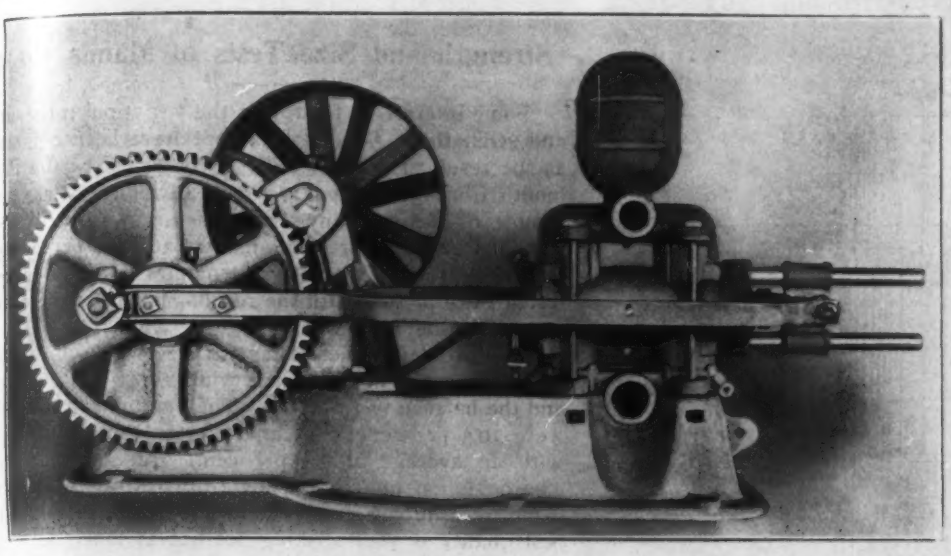
Chart Showing Results Obtained from Tests of Manila Rope Made by the Plymouth Cordage Company, North Plymouth, Mass.

value. The maximum strength was 9010 lb. or 2.5 per cent. above the standard while the minimum was 4946 lb. or 43.7 per cent. under. A curious feature about this particular specimen, which is No. 19, is that while the strength is very low, the size is above the standard and less than the average variation. An inspection of the chart of results will show a number of similar inconsistencies, especially in the case of Nos. 10, 12 and 13. The first is the largest rope but is the third weakest with a variation of about 23 per cent., the size and strength of the second are both subnormal 7 and 12 per cent., respectively, while the strength of the other is 2½ per cent. above standard, the maximum developed, and the size is ½ per cent. below.

The statement is made that this year's output of one automobile factory in Detroit, Mich., will reach a value of $19,000,000, which, it is asserted, is more than the output of the stove, paint, drug and freight car industries of the city amounted to in 1900. At that time these were the principal industries in the city of Detroit, and few, if any, automobiles were being built there. The comparison made shows the tremendous extent to which the new industry of manufacturing automobiles has developed.

New Peters Double Acting Power Pump

An inexpensive pump operated by a gasoline engine or an electric motor for filling pneumatic pressure water supply tanks which the Peters Pump Company, Kewanee, Ill., has recently brought out, is illustrated herewith. The special features of the new pump are durability, efficiency and simplicity.



A New Type of Double Acting Power Pump Built by the Peters Pump Company, Kewanee, Ill.

The pump has removable bushings which are easily replaced when worn and each bushing has its own individual oil cup, which insures efficient lubrication. The piston, which is of brass in common with the cylinder, is supported by the two steel guides projecting at the right of the pump and all wear of the piston is said to be eliminated.

The following table gives the principal dimensions and specifications of the pump:—

Diameter of piston, inch	2¾
Diameter of cylinder, inches	3
Length of stroke, inches	5
Overall length of pump, inches	41
Width of pump, inches	22
Hight of pump, inches	20
Capacity, gallons per hour	750
Suction head, feet	28
Working pressure, pounds per square inch	125
Delivery head, feet	250

When an electric motor is employed for driving the pump, the maker recommends that one having a speed of 800 rev. per min. be used, or if that is not available, a pulley of sufficient diameter to reduce the number of piston strokes to 40 per minute should be employed.

The Stover Pipe Wrench

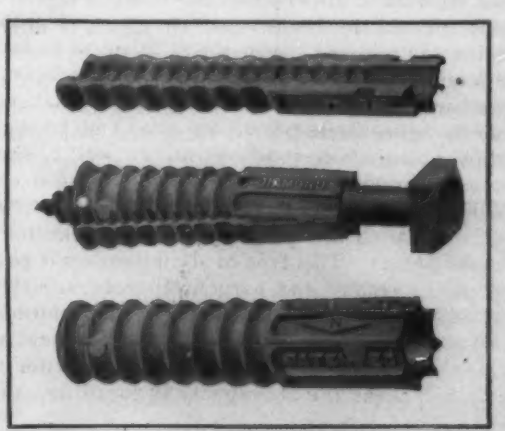
A new style of pipe wrench declared to possess a number of time saving features has been placed on the market by the Wright Wrench & Forging Company, Canton, Ohio. The Stover pipe wrench, as it is called, is quickly adjustable, having an automatic grip, which it is claimed will not flatten the pipe, while the instant release makes it practically impossible for it to lock on the pipe. Only one hand is needed to adjust the tool to any size of pipe, a feature which will appeal to pipe fitters, who frequently have to either use one hand to hold a light or grasp some object for support.

The Stover Pipe Wrench, Made by the Wright Wrench & Forging Company, Canton, Ohio.

As will be seen from the engraving, the mechanism is simple, easy to understand, all parts are readily accessible, and the strength of the bar is not weakened by pin or screw holes. The positive stop on the movable jaw, it is claimed, will prevent the pipe from being flattened, while all sizes from ⅛ to 1½ in. are firmly gripped. The arc on which the jaw moves provides an automatic grip and an instantaneous release. The only wearing part of the tool, the grip, is interchangeable and can be readily replaced at the cost of a few cents. The weight of the wrench is ¾ lb., which is lighter, so it is stated, than any other pipe wrench of its capacity, while it is approximately 25 per cent. stronger.

A New Diamond Expansion Bolt

There has recently been placed on the market by the Diamond Expansion Bolt Company, 90 West street, New York City, a new design of expansion bolt for lag screws, which it is said contains a number of improvements over the usual design. The principal advantages claimed for this new bolt, which is known as the Diamond N, are the employment of a corrugated holding surface and a new style of clamping lugs. Half of the holding surface is shown in the upper portion of the accompanying engraving, while the middle and lower views illustrate the bolt and the holding shield complete, respectively.



A New Type of Expansion Bolt Made by the Diamond Expansion Bolt Company, New York City.

In the older types of bolt the shells were held together by a wire or a spring, which frequently became detached and allowed the parts to separate, but in this new bolt a lug cast integral with one of the pieces and fitting into a groove on the other member is employed. The corrugated holding surface increases the gripping power of the bolt over that secured in the older types by a series of points, and to prevent the shield from turning in the wall when the lag screw is started the longitudinal ribs at the outer portion of the shield form an octagonal section. The shield diameter is slightly larger at this point, so as to insure the first grip being on the longitudinal ribs.

The Killing Little Giant Molding Machine

A New Rockover Type Handling Large Molds

A new molding machine the special features of which are large capacity and ability to handle comparatively big molds has been brought out by E. Killing's Molding Machine Works, Davenport, Iowa. This machine is of the jarring power rockover type and it is claimed to be very fast and effective in doing its work while the cost of installing it is comparatively small. As illustrated in the accompanying engravings, the machine is mounted with an oil box pattern having a 10-in. draw and the clean sharp molds it makes are clearly shown. Fig. 1 shows the pattern ready for the sand, Fig. 2 is a view of the machine with the pattern being rocked over and Fig. 3 shows the pattern withdrawn from the mold.

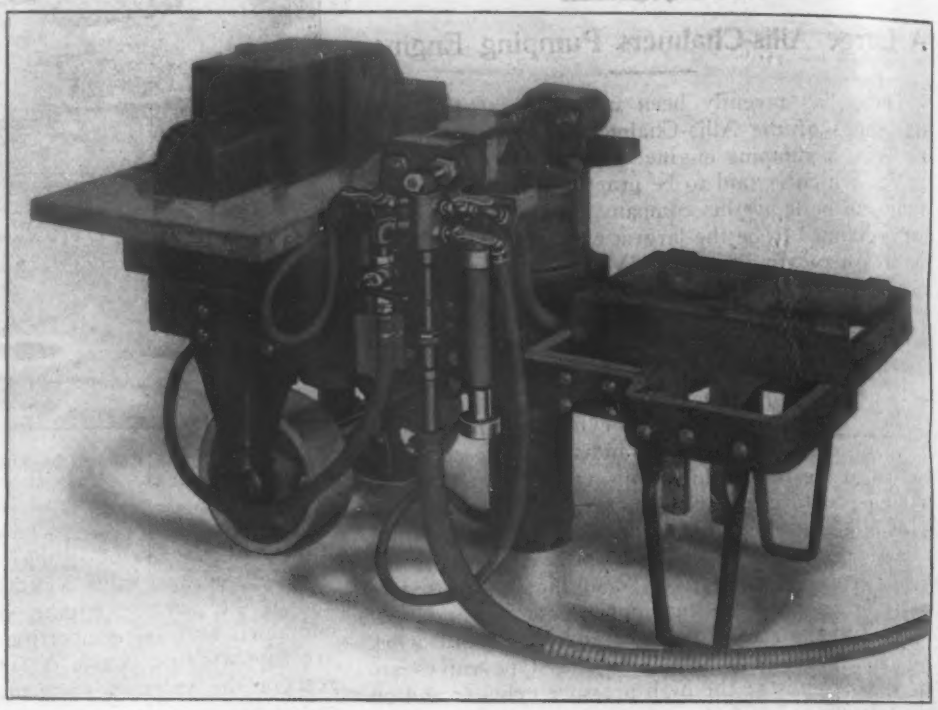


Fig. 1.—Pattern Ready for the Flask and Sand on the Little Giant Molding Machine Made by E. Killing's Molding Machine Works, Davenport, Iowa.

In operation, the pattern is mounted on the pattern board and the whole fastened to the rockover table. When in this position the flask is applied and filled with sand after which the mold is jarred to the proper density by compressed air which is alternately applied and released automatically in the cylinder under the jarring table. The flask is rocked over by air and the rockover table lies flat on the jarring table while the mold is being jarred. An elongated slot allows the rockover to move vertically with the jarring table while the latter is in motion but a clip holds the free end of this rod when the mold is being rocked over as in Fig. 2.

The construction of the jarring cylinder and the valve is said to be simple and possess many good points, viewed from the jarring standpoint. The latter is of the expanding ring piston valve type and the cylinder is fitted with metal rings which, it is claimed, insures a tight cylinder and saves air. The flask is set up on an equalizing frame of bars held in a frame which is adjustable to suit the flask hight. These bars are very sensitive and act without springs. They also lock automatically and require no blocking up which would strain and tear the mold due to the production of an unequal tension. This equalizing device assures a clean sharp mold and when vibrators are used the draft of the patterns need be very slight. Air is employed to draw the pattern just as fast or slow as the work will permit, which is a feature worthy of attention.

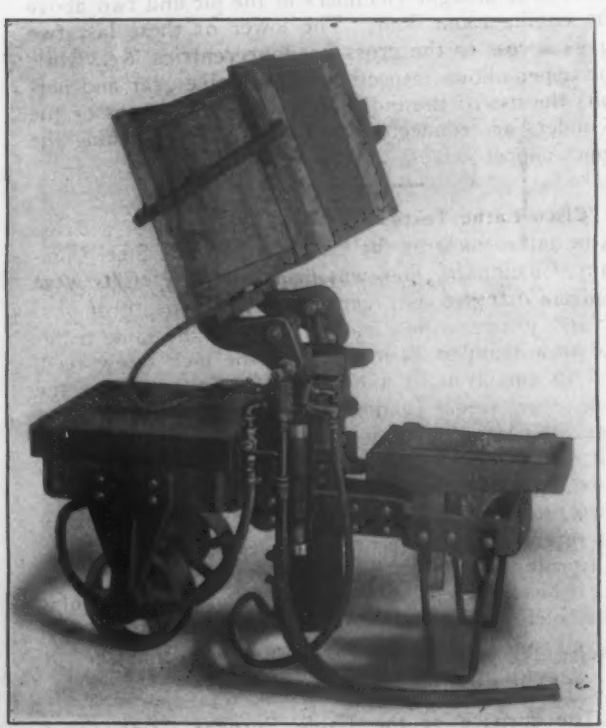


Fig. 2.—View of Machine While the Flask Is Being Rocked Over.

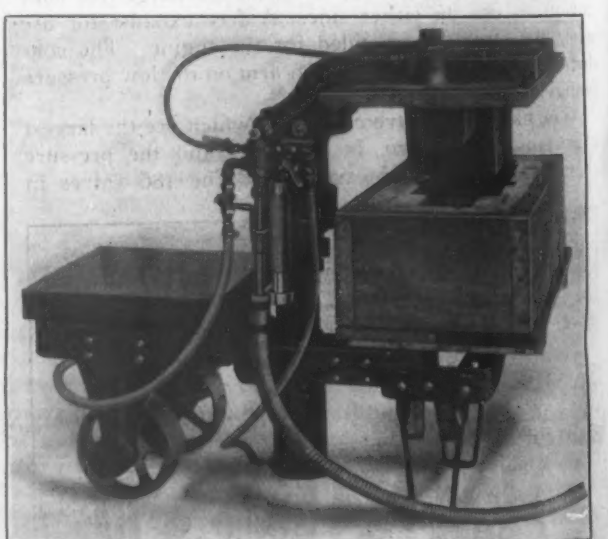


Fig. 3.—Machine After the Pattern Is Withdrawn from the Mold.

The following table gives the principal dimensions and specifications of the machine:

Length of draw, inches	10
Weight of heaviest molds, pounds	250
Weight of machine, pounds	600

Air consumption, cubic feet per minute	15
Floor space, inches	24 x 40
Hight of jarring table top from floor, inches	22

No springs are attached to the machine and all the working parts are protected against the wearing action of the sand. Feather key guides are used to keep the drawing cylinder in line and prevent shift while the patterns are being drawn. There is an automatic exhaust on the jarring cylinder and vibrators can be attached directly to the pattern plate.

A Large Allis-Chalmers Pumping Engine

There has recently been completed at the West Allis shops of the Allis-Chalmers Company, Milwaukee, Wis., a pumping engine for the city of Wheeling, W. Va., which is said to be practically equal in power to the one built by this company for Nashville, Tenn., that is claimed to be the largest ever constructed. The low pressure cylinder of the Wheeling engine is probably the largest ever used on a pumping engine, its diameter being 110 in. and the stroke 72 in. This engine is of the vertical triple expansion crank and flywheel type, and is designed for a steam pressure of 125 lb. and a vacuum of 27 in.

The diameters of the steam cylinders, all of which are steam jacketed, are 42, 74 and 110 in., respectively, and that of the water plungers is 33 in. The steam for the high pressure cylinder jacket is by-passed around the admission valve, while that for the intermediate and low pressure cylinders is taken from the first and second receivers, respectively, and the steam used to jacket the intermediate and high pressure cylinders is trapped into the second receiver and does useful work in the low pressure cylinder. Corliss type valves are used on both ends of the high pressure cylinder and on the admission side of the intermediate cylinder, while poppet valves are employed for the rest. All the valves are driven from eccentrics on a lay shaft supported on brackets on the main frame of the engine, which shaft is itself driven by drag cranks and connecting rods from each end of the main shaft. The surface condenser is located in a by-pass of the discharge line with cut-off valves on either side. A free exhaust for use when necessary is provided for the engine. The condenser pump is driven from an arm on the low pressure plunger.

The cast steel valve chambers, which are the largest ever built, are 78 in. in diameter, and the pressure chambers are also of cast steel. The 186 valves in each chamber are of a special gravity type, which does away with the use of springs and all are mounted directly in the steel valve deck without cages. The water end of the pumping engine, shown in Fig. 2, is self-contained and self-supporting. The steam cylinders are supported on double A frames, one end of which rests on the water ends and the other on a pier. Each piston has a single piston rod, which is screwed into a cast steel cross head and secured by lock nuts. Each of the steam cross heads is connected to the water cross head by four steel distance rods, and the water cross heads are connected to the water plunger by heavy cast iron pipe sections fitted with adjustable guides.

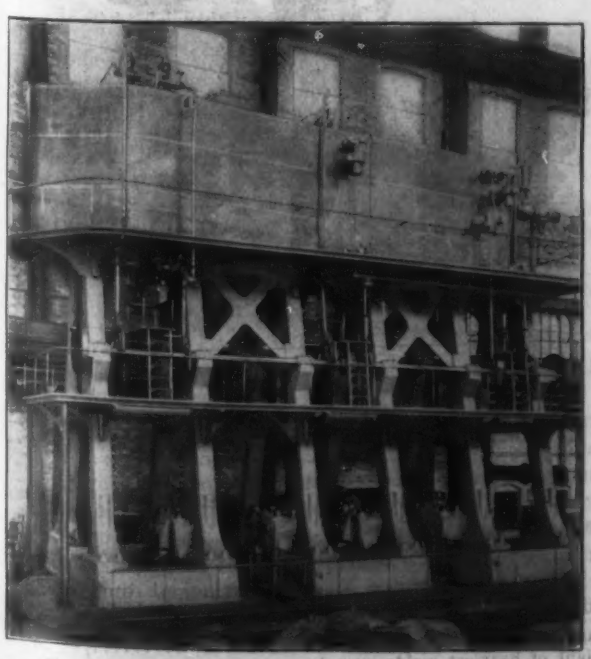


Fig. 1.—The Steam End of a Large Pumping Engine Built by the Allis-Chalmers Company, Milwaukee, Wis.

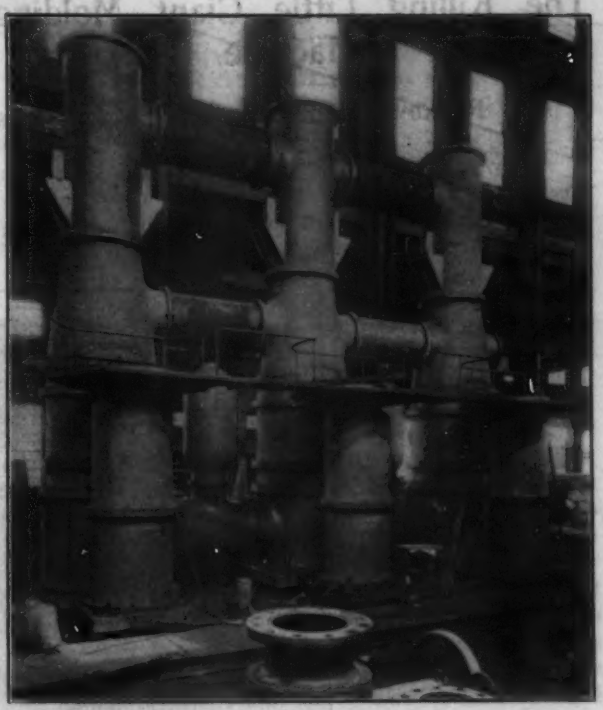


Fig. 2.—The Pump End of the Engine, Which Has a Capacity of 20,000,000 Gal. Per 24 Hours.

The water end is located in a pit 46 ft. deep, and the total hight of the engine is 84 ft. 8 in. from the base of the water end to the top of the steam end. There are four galleries; one at the level of the valve deck, one at the plunger chambers in the pit and two above the engine room floor. The lower of these last two gives access to the cross heads, eccentrics, &c., while the upper allows inspection of the valve gear and permits the use of the indicator motion. The tops of the cylinders are connected by platforms for reaching the upper poppet valves.

Cisco Lathe Tests.—An interesting test of a Cisco 14-in. lathe, made by the Cincinnati Iron & Steel Company, Cincinnati, Ohio, was made recently. Cuts were made in 0.25 per cent. carbon steel to a depth of 9-16 in. and 36 to the inch friction feed; in the same material to a depth of ⅜ in. at 18 to the inch screw feed, and in cast iron to a depth of ⅞ in. at 18 to the inch screw feed. In these tests it was endeavored to break the lathe but the only part that broke was the belt. This is justly considered exceedingly heavy work for a 14-in. lathe and indicates very forcibly its powerful construction. For these lathes the company has recently had three orders from Canada, two from California, one from Texas and one from New York, and it has also received orders for considerable equipment, including larger lathes from Florida and miscellaneous small tools from Arkansas and Tennessee.

The furnace of the Eagle Furnace Company at Attalla, Ala., has been blown out. It has produced charcoal iron for some months.

Concrete vs. Wood Flooring

Practical Experience with Concrete and Wood Floors in Machine Shops

James N. Heald, Heald Machine Company, Worcester, Mass., sent out a number of inquiries in investigating the above subject, asking these questions: "Are you using concrete floors at present and are they satisfactory to you and the workmen? If you were to build a new shop, what would your experience lead you to use for the floors, and how would they be constructed?" In answer 40 letters were received, and after tabulating these it was found that eight were distinctly in favor of concrete floors for machine shop use, 26 decidedly in favor of wood, and six noncommittal, being favorable to each under certain conditions and for certain work.

Based upon these reports, Mr. Heald presented a paper to the National Machine Tool Builders' Association at its meeting in New York, October 26, 1910, as follows:

These reports came with only one or two exceptions from those operating machine shops, although 16 of them were not machine tool builders. All of the eight who preferred concrete have had experience with both wood floors and concrete floors. Seventeen of the 26 who prefer wood floors have actually had experience with both; the other nine based their preference for wood upon investigations made by them when looking up this matter for their own benefit.

The general point of view of the writers of these letters can best be given, perhaps, by two or three extracts from the letters sent me, and I will quote, first, one in favor of concrete, written by the president of one of the leading machine tool builders of the country, which you will recognize readily from being located in a town in southern Vermont.

Satisfactory Concrete Floor in a Vermont Shop

We built a three-story cement and steel building in 1904, and in 1907 we put up a saw tooth single story building. In both of these buildings we have used concrete floors without wood. We noticed the men who were accustomed to stand on a wood floor became more foot-tired, at least at first, in the cement building, and possibly those whose work gave them an opportunity to move about were also slightly affected in the same way, but as for this we are not sure.

We do know that in these buildings with floors we provide a thin platform of wood for men who do not move about; we do not find it necessary to provide it for others. The planer and the bench hands whose work calls for standing in one position most of the time need the wood insulation.

Among other objections was that the cement was supposed to increase rheumatic troubles. We have had no such complaints, and have felt that the advantages more than offset the disadvantages.

It makes a cleaner, wholesomer shop, one in which it is possible to clean the floors from all of the objectionable matter that accumulates in the cracks of wood floors, and it also makes possible the introduction of cuspidors cast directly in the floor, into which we run a flushing stream at regular intervals.

If plants could be heated through simply warming the floor, as we believe has been suggested, then the only serious objection to the cement floor would be removed. It is possible that the hollow tile may serve for this purpose. A layer of this tile, with openings registering the entire width of the building and connected with conduit pipes on the lines already suggested, would give a very even distribution of heat and would not make an expensive floor, although the total thickness would have to be probably 2 in. under and 2 in. over of cement, with hollow tile of 4 or 6 in., according to the load.

This would bring the temperature of the floor up closer to that of the workmen's feet and would make the floor the warmest part of the building and do away with pipes of all kind. It might not be necessary to have any immediate openings into the room, except for a slight circulation. There is no reason why steam pipes could not be put in the same openings.

There remains the element that always enters into the use of concrete, which must be seriously considered by anyone building a more than one story building. A few shovelfuls of earth without the proper amount of cement, or a few shovelfuls of inferior earth material instead of sharp sand, may happen to be placed where it will cause serious disaster, but we have had no experience of this kind, except that we have had to worry about it, particularly at first.

A Plea for Wood Floors

Among the letters favoring wood floors, one from a leading manufacturer of twist drills in Cleveland, Ohio, is as follows:

We have one building in our group made all out of concrete. This building is three stories high and all the floors are concrete. We have been greatly disappointed in the concrete floors. In the first place, any water spilled on one of the floors filters through to the next. These floors are not suitable for running trucks over them, as they chip out and wear in grooves. Our men do not like them and complain of the effect that standing on the concrete floors has upon their legs. This may be imaginary, but it is to be considered. We have recently made an experiment on these floors by covering them with about 2 in. of first class paving asphaltum, put on by the company that does the asphaltum paving in this city. So far we think this is an improvement, and another year may extend this coating over all the floors in this building. In our judgment the best floor for a factory is narrow matched maple. It wears smoothly and is easily repaired.

Found Concrete Floors a Mistake

A manufacturer of automobile parts in Detroit, Mich., says:

We are using concrete floors in our factory building, which is devoted to light machine shop manufacturing operations. From our experience so far, we are quite firmly of the opinion that this is a decided mistake, and that wood floors would be much better and more economical in the long run for such occupancy. While there have been some few cases of complaint from workmen, this has not been at all serious. So our objection to concrete is more on the score of its being unsuitable as a wearing and working surface in general as applied to machine shop operations.

As a matter of wear, we find it giving way much more rapidly than we had anticipated, while, due to this, and at the same time aggravated by the presence of metal chips and oil, it is rather difficult to keep clean. Another serious objection to concrete is the invariable damage suffered by tools and finished pieces of work dropped upon it; 1 in. to 1½ x 3 in. maple is generally considered to be the best flooring material and is what we should use in future.

Uses a Concrete Body with a Wood Top

A manufacturer in Stamford, Conn., writes:

We have in two instances in our factory examples of concrete floors on which active manufacturing is being conducted, and in both cases, during the winter months, we have trouble in keeping the men comfortable in these rooms. The reason undoubtedly is due to the fact that the concrete floors abstract the heat of the body from the feet, chilling the blood and consequently producing a feeling of discomfort which is attributed by the employees to want of proper heat in the room.

The main portion of our factory is composed of wooden floor of three thicknesses—namely, a supporting floor of sufficient strength underneath, an intermediate floor and a top wearing floor of maple. We find that this construction of flooring gives us excellent satisfaction from the standpoint of the employees, and likewise has the advantage of being readily repaired by replacing the upper surface without disturbing the main features of the construction of the building.

In two of the buildings we have used the reinforced concrete form of construction as far as the floors and columns are concerned, and in this instance we have put screeds in the concrete, nailing down an intermediate floor and top wearing floor of hard maple as above. This method has given excellent satisfaction, and the writer has had the chance of studying, from his own personal feelings, the effects of such a floor on account of our main offices being laid in one of these reinforced concrete buildings.

On the ground floor we have used a method of tar concrete for a depth of 4 in. in which are buried screeds, and

an intermediate floor and top maple floor as in the above examples cited. This method for the ground floor work is highly satisfactory, as it keeps out the dampness and preserves the floor. The writer had the experience within the past six months of taking up a portion of a floor of this character, which had been down 30 years. The under flooring and screeds were just as clean and well preserved as if they had just come from the lumber yard.

In cases where we have found sensitive persons complaining as to the conditions arising from the use of concrete floors, we have made a lattice of wood for the employee to stand upon with a marked improvement in his apparent physical comfort.

The Trend Toward Concrete Construction

During the last three or four years the use of concrete for factory buildings has greatly increased and, when properly reinforced, has proved entirely satisfactory. Owing to the reductions in the cost of cement and increases in the cost of other materials, the use of reinforced concrete has become quite general, and therefore the floors of such structures are worthy of special notice. Reinforced concrete floors are made in numerous styles by different engineers, but the fundamental idea is that of using bars or other forms of steel as the tension members imbedded in concrete bodies. The floor proper is simply a slab like a cement sidewalk with reinforcement near the lower surface and supported by beams of concrete, also reinforced, which are formed as a part of the slab.

It is claimed by some of the advocates of concrete floors, that the real cause of the workman's complaint is undoubtedly the coldness and not the hardness of concrete floors. Everyone knows that the coolest seat on a hot day is a stone doorstep, and like the stone step, the concrete floor feels colder than the wood floor. When a concrete floor is in contact with the ground, it actively withdraws heat from its inner surface, because it is a good heat conductor.

At all seasons the concrete floor feels colder than the wood floor, and the effect of this on the operator who stands for hours in one place is gradually to chill his legs and thus still the circulation in them. In some shops the operators not only bring in boards and the like to stand on, but have gone so far as to wear heavy overshoes during working hours.

The actual heating of the concrete floor slab itself by means of contained steampipes or hot air ducts arranged in the substance of the flooring has proved remarkably successful in the plant of the Morse Chain Company, Ithaca, N. Y. In this plant the workrooms are heated by radiation from the concrete floors, with no direct admission of hot air except in extremely severe weather. The experience of this company seems to demonstrate that workmen have mistakenly attributed the effects of the cement floor to its "hardness," when in fact it was the "coldness" which was to blame.

The Wearing Qualities

Taking up now the requirements of satisfactory floors of concrete, we come first to the wearing qualities:

1. Liability of granolithic to wear into hollows, or ruts under heavy trucking.
2. Dust, due to abrasion of the floor surface, which is sometimes merely disagreeable, but which in some cases works damage to machinery and product.
3. The difficulty of making effective repairs in granolithic finish.
4. Trouble in attaching machines to granolithic floors.

Trucking, as shown by the letters received, develops quite a little trouble, especially where the concrete blocks are marked off into squares, as is usually done. It would be much better, so far as this point is concerned, if the marking off of the squares was omitted in such floors, which is done partly for looks and partly that any cracks which develop may run through these markings and in that way not show in the level surface.

One suggestion made by an advocate of cement floors is that flat iron bars slightly separated and not on edge be imbedded in the floor in the direction in which the trucking is done, and in that way take the wear of the trucks and save the concrete. They are better than solid flat plates, which become polished and therefore very slippery after a time.

With reference to the question of dust, this has been struggled with by all the advocates and builders of concrete floors. Various paints are offered to prevent this, but they are of little value. The floors can be kept painted, but the expense of this must amount to quite a little. No film as thin as the average coat of paint will permanently resist the usual wear of the shop. It is claimed that a boiled linseed oil, thinned with gasoline or naphtha until it runs into the pores of a porous surface, oftentimes prevents trouble and is cheaper than some of the floor paints. This preparation is incidentally a good waterproofing for porous surfaces, as well as a preventive of dust.

In the matter of repairs, the granolithic surface is obviously at a disadvantage compared with wood, because of the difficulty of firmly bonding new material to the old.

The difficulty of attaching machines to the concrete floor is probably overrated by those who have had no experience in this line. Many of the later types of machine tools are so heavy, so well designed and so self-contained that they require very little, if any, attaching or bolting to the floor, and therefore the drilling for plugs into which screws can be driven, or the use of expansion bolts, should be a comparatively simple matter, and this point should not claim much consideration.

The breakage of parts in process is something that must be considered individually. If manufactured articles are delicate and finished all over there is risk of serious injury to them in dropping on the floor, which would not be the case with a wood floor. Therefore, if the article being manufactured is fragile the wood floor is quite desirable.

With regard to cleanliness, there is not much question that the concrete floor can be kept cleaner than the wood floor, which has so many cracks, usually full of dirt. What dirt accumulates on the concrete floor is right on the surface and can much more readily be taken up.

Need for Careful Troweling

With reference to waterproof granolithic floors, experts say that they must be troweled hard to make the surface durable, and that this troweling also makes it practically water proof. There will be no leakage of water that may get into the surface, except at joints, and possibly in places that have been worn by use. The extent of damage would be simply whatever was done by the leaking water in the room below. The conclusion is that the highest success in the construction of a granolithic floor surface can be obtained only by following very carefully correct principles of construction and certain methods of manipulation.

There are certain situations where, in spite of its higher cost, the wood top floor is probably better than any granolithic surface for the owner to put in, simply because his case may require certain qualities which the wood top can provide, and which no masonry surface can give, and which he must have, even at a higher first cost.

The virtues of a wood floor are inherent in naturally formed material whose fitness is apparent at a glance. Saw up the tree, season the sawed and planed strips, let the carpenter make them into a floor, and you have a wearing surface of certain high and recognized value.

With the granolithic surface, it is necessary to select cement and other materials for certain qualities which are not evident in the appearance of these materials; correct proportions must be determined; materials must be put on the right kind of surface and at

the right time, and they must be manipulated in the right manner. The green surface must be protected for a certain number of days while it is setting. The mere statement of the procedure necessary with the granolithic finish is enough to show that the average granolithic floor will be more or less unsatisfactory, because the average concrete workman is inclined to hurry, and is often poorly informed as to the procedure necessary for getting a good surface, and for that reason, to a large extent, the success or failure of a granolithic surface comes down to the question of workmanship.

Comparative Thickness

There is one other feature which is often overlooked concerning concrete floors and wood tops, and that is the comparative thickness that is necessary for the two kinds. When concrete alone is to be used, the entire thickness of the slab, including that portion which is put on for the finish, if properly handled, can be bonded together and made to give strength as a single slab carrying no dead weight. With the concrete floor made with a wood top, the concrete slab should be just as thick as in the first case, but, in addition to its own weight, it has the weight of the screeds which are put on, also the weight of the cinder or concrete filling between the screeds, and not forming structurally a part of the floor slab; also the weight of the planking in the upper floor, together with ⅞-in. maple top floor, which all together reach a much higher total figure than might be supposed by anyone who has not gone into the engineering side of the matter.

If 6 or 8 in. concrete slabs were sufficient to support the load of any given floor, provided it was of concrete, a slab thicker than this would really be required when it was to be covered with a top flooring of wood, and the accompanying screeds and tar concrete necessary in this other type of construction. This, of course, adds to the expense and to the time required for putting in the floor, because the concrete should be thoroughly dried before anything is done with the wood floor above it. Ample time must be given to dry the slab out thoroughly before the kiln dried stock is put in place, else the floor will swell, curl and make trouble.

Guarding Against Dry Rot

If, when the slab is still damp, waterproof paper is laid between the under flooring and the top flooring, it is almost certain to cause dry rot in the under flooring and the screeds and make trouble later on.

In accordance with the suggestions made in some of the letters that I have received, it seems as though a very desirable floor can be made by using a concrete base, afterward covered with a thin layer of pitch or tar concrete, in which screeds are set and carefully leveled up, then filled between with soft concrete leveled off flush with the top of the screeds; on this put at least 2-in., or, better still, 3-in. plank running crosswise with the building and covered finally with ⅞-in. square edge boards, preferably tongued and grooved at the ends for the finished flooring. This gives the advantage of concrete so far as the foundation is concerned; it gives the waterproofing and preservative qualities of the pitch and tar concrete, and the advantages of wooden top floors which, while costing a little more in the beginning, will probably, in 90 cases out of 100, be found more satisfactory in the end.

With reference to the relative cost per square foot for different types of flooring, I would say that, owing to the limited time allowed for the paper, I shall not be able to go into this part of the subject, and also for the further reason that these costs would vary considerably in different localities, according to the relative prices of the materials at such points. In a general way it might be said that the finished granolithic floor would cost around 25 to 30 cents per square foot, and a concrete floor with wood top covering, as suggested above, would figure 12 to 14 cents additional.

New Tools and Appliances

This is essentially a news department for which information is invited.

Motor Mount for a Universal Miller.—The Garvin Machine Company, Spring and Varick streets, New York City, is equipping its No. 1½ universal milling machine with a motor mount, which is so designed that it can be attached to a stock machine thus avoiding the expense and delay of covering the motor drive requirements. The motor may be located on the floor beside the machine but preferably on a bracket at the rear, as in this way the entire outfit is self-contained. Although the distance between the two cone pulleys is short, the power of the machine is said not to be deficient on this account. A high-speed narrow belt transmits power from the motor to a two-step overhead cone pulley, which connects through double back gears to the main cone pulley, thus furnishing 16 speed changes, eight of which are obtained by gears and doubled by the steps of the pulley. Both the overhead cone pulleys run on a stationary shaft stud, which is keyed to eccentrics, one of which operates the belt tightener through a segment worm gear controlled by a crank. One of the special features of this belt tightener is that no locks are necessary to retain the tension and the ease with which the belt is tightened tends toward high productive capacity.

Large Adjustable Reamer.—The Lapointe Machine Tool Company, Hudson, Mass., has recently made an adjustable cylinder reamer, which is probably one of the largest ever manufactured. It is made with high-speed blades and a body of machinery steel which has a 4½ in. hole, with a ¾-in. keyway for convenience in fastening to the arbor. The over-all diameter of the tool is 10 in. and its weight 92 lb. The steel from which the body was made in the rough weighed 152 lb.

New Tool Holders.—The Ready Tool Company, Bridgeport, Conn., announces through its sales manager, Gorham C. Parker, that a number of special tools, including a roughing tool, an internal threading tool and a boring bar, are being developed in the experimental department of the company and it is expected will be perfected by the first of the year. Like the other tools manufactured by this company, the holders will be of standard size and section, while steel cutters of special designs are inserted in the holder and held fast. One of the special features of the entire line of tools is the fact that they work up to the stock much closer than those of the older type, which results in a considerably lessened amount of waste material.

A Universal Grinder.—The Modern Tool Company, Erie, Pa., is building a new type of universal grinder in the design of which special care has been given to rigidity. With this end in view the frame is made nearly as long as the ways themselves, which have practically no overhang and are consequently evenly supported throughout their entire length. The headstock and footstock, together with the wheel mountings are also exceptionally heavy and rigidity is a salient feature not only of every part of the grinder itself, but also of the fixtures and attachments. Aside from the rigid construction, the method of clamping the headstock and the footstock to the swivel table is also worthy of mention. In the arrangement used a large positive edge is obtained located out of the way of grit and water. By loosening the head and footstock gibs when it is necessary to relocate them on the table all wear on either the edge or the gibs themselves is prevented and it is claimed that this edge will remain perfectly straight throughout the life of the grinder without rescraping.

Inside Micrometer Caliper.—A set of two inside micrometer calipers is being manufactured by the Emerson Apparatus Company, 251 Causway street, Boston, Mass. The smaller of the tools has two screws and a range from ½ to 1 in., while the larger one measures from 1 to 2 in. The micrometer is graduated to give measurements di-

rectly in thousandths of an inch, and by estimating the operator can obtain measurements to a quarter of these divisions. The measuring screw is held in the body of the instrument and is advanced by a graduated nut, every revolution of the nut moving the screw 0.025 in. A pin is provided for locking the measuring screw, after the adjustment has been made. All the parts of this micrometer are hardened except the measuring screw.

A Geared Feed Upright Drill.—The Sibley Machine Tool Company, South Bend, Ind., is equipping its entire line of drill presses above 20-in. swing with a positive geared feed. The power is taken from the top shaft through spur gears and is transmitted by spiral gears to the vertical feed shaft. The case in which these gears run is partly filled with oil, which insures thorough lubrication. The feed box is located on the head and is of the sliding key type, giving four changes and a neutral position, the changes being controlled by a small knob in the center of the hand wheel. An automatic stop collar on the sleeve of the spindle throws the latch which holds the feed worm in mesh with the bronze gear and the entire mechanism swings out of operation.

Grinding Machine for Hobs.—The Meisselbach-Catucci Mfg. Company, Newark, N. J., is building a new type of hob grinding machine, the important points of which are that the teeth are radially ground and water is abundantly supplied to prevent the burning of the edges of the cutter being ground. The face of the emery wheel can be set radially with the work quickly and its face is ground perfectly true by a simple fixture holding a diamond tool. Reliance is not placed upon the teeth of the cutter being ground for the spacing required in grinding them, but the work is independently redivided by a large index plate on the wheel, thus correcting inequalities caused by hardening or uneven wear. While primarily designed for grinding straight fluted hobs for cutting gears of the smaller pitches, an attachment for grinding spirally fluted hobs can be supplied, and gear cutters, forming cutters, screw machine round forming cutters, taps and similar tools can also be ground. The maximum diameter handled by the machine is 5¾ in.

Band Sawing Machine for Patternmakers.—P. Pryibil, 512 West Forty-first street, New York City, is building a patternmakers' band saw capable of taking blades up to 2 in. wide. The frame is cast in one piece. The cast iron table tilts to raise the inner edge to any angle not exceeding 45 degrees and to lower it to a maximum of 5 degrees. The throat through which the saw passes is a disk that is easily removed when the wooden lining requires renewing. The wheels are of cast iron with rubber faces which are vulcanized in place, and the lower one is extra heavy and serves as a flywheel. The mechanism is entirely inclosed on the working side of the machine and the slack side of the saw runs in a cast iron channel, which protects the operator and prevents the saw from being thrown off the wheels if accidently struck.

A New Four-Head Drilling and Turning Machine.—A new type of four-head drilling and turning machine is being built by the Garvin Machine Company, Spring and Varick streets, New York City. The class of work for which this machine was especially designed is four-position pieces, but by using an index fixture pieces having 8, 12 or more positions can be drilled and turned. The box tool used with three or more tools is screwed on the end of the spindle and will turn one or more diameters, giving them a highly burnished finish and accurately cut shoulders. To eliminate trouble from chips the lubricating oil is fed under pressure through the spindles, while to confine the oil and chips a balanced hood is employed which can be readily lifted to permit the putting in and taking out of work. The extreme distance between the ends of the spindles is 16 in., with a travel of 6 in. for each head, which makes the minimum distance between the spindles 4 in. This construction permits holes 6 in. deep to be drilled with each head, and also the finish turning of work 3 in. on each end of pieces whose over all dimension is 10 in.

Gear Hobber.—The Barber-Colman Company, Rockford, Ill., has designed a gear hobbing machine for use in manufacturing work for cutting spur and spiral gears where rapidity and accuracy are required. The idea has been to produce a machine embodying the features which have made the ordinary rotary cutter type satisfactory. Long bearings insure continued accuracy of alignment of the work arbor with the hub slide and furnish means for adjusting for wear. The hub is horizontal, with long narrow taper gibbed guiding ways, and can be easily adjusted or swiveled to the correct angle, while lateral adjustment is also furnished. Special facilities for taking care of the chips are provided, and the lubricant is contained in a tank cast integral with the bed. The drive is of the direct single speed belt type, so that it is possible to belt directly from the main line shaft or from a motor as may be desired, while the speed changes are obtained through transposing gears. The feed is positive and any desired rate may be secured through change gears. The feed of the hob slide is automatically tripped at any point of its travel, and the single set of change gears governing the number of teeth and pitch of the spiral to be cut are located at the rear end of the machine.

Stoping Drill.—The Sullivan Machinery Company, 150 Michigan avenue, Chicago, Ill., has placed on the market a new type of stoping drill which is known as the DA-21 improved air feed drill. This drill is of the hammer type and the drill is rotated by hand, while an air piston strikes 1200 or more blows per minute on the end of the bit. The special advantages claimed for this particular type of drill are its light weight, the ease and rapidity with which it may be set up and handled, its high drilling speed and economy of power, labor and maintenance. These drills are said to cut from 25 to 50 per cent. faster than a reciprocating drill, and 8-ft. holes large enough to take 1-in. powder can be easily cut. The automatic air feed consists of a cylinder and a tightly fitting piston with a rod of the same length as the cylinder. The tool rests upon the point of this piston rod, and when air is admitted to the cylinder the pressure on the piston raises the machine up and feeds it automatically as the bit drills into the rock.

Saw Sharpening Machine.—The Hunter Saw & Machine Company, Pittsburgh, Pa., is building a type of saw sharpener in which the emery wheel arbor is supported on both sides of the pulley by adjustable bearings. The ram is square set, so that a vertical lines passes through the two vertical corners and the center and is held in place by an adjustable cap with liners, while a hand lever controls its movement. The arbor is adjusted approximately by hand on a vertical square shaft and the adjustment is completed by a screw and hand wheel. Automatic indexing is another feature of the tool. This machine will bevel the cutting points of milling saw teeth, as well as gumming, facing and topping them.

A New Type of Counter.—W. N. Durant Company, Milwaukee, Wis., has made an improvement in its standard model B counter. This change consists of a large thumb nut at the left end of the case, a single turn of which instantly brings all the figures to zero. The figures of these counters are large and prominent and the digit wheels are fully geared. The working parts are few in number and the counter is inclosed in a small neat case. A special type of driving ratchet enabling a very short stroke is used and is said to render skipping or jumping absolutely impossible even at high speed. Several styles of counters are made with this improvement, including types with rotating shaft, star wheel and lineal measuring wheel.

The Follansbee Brothers Company, Electrical Sheet Business.—Following the completion of large extensions and the installation of additional equipment in its sheet mills at Follansbee, W. Va., the Follansbee Brothers Company, Pittsburgh, Pa., is now in position to give its electrical sheet business much better attention. Owing to the fact that its output was disposed of in other special qualities of steel sheets, the company has hitherto been compelled to decline attractive orders for Follansbee improved electrical steel sheets. It now assures its customers of prompt deliveries of such sheets in large or small quantities.

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1⅝ in. round and square; 1½ to 4 in. x ⅜ to 1 in.	₩ lb 1.90¢
1½ to 4 in. x ¼ to 5-16	₩ lb 2.10¢
Rods—⅜ and 11-16 round and square	₩ lb 2.10¢

Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.10¢
3 in. x 5-16 in. and ⅜ in.	2.35¢
1½ to 2½ in. x ⅛ in.	2.20¢
1½ to 2¾ in. x 3-16 in. and thicker	2.10¢
1 to 1¼ in. x 3-16 in.	2.20¢
1 to 1¼ x ⅛ in.	2.30¢
⅞ x ⅛ in.	2.40¢
¾ x ⅛ in.	2.50¢
⅝ x ⅛ in.	3.55¢
½ x 3-32 in.	4.35¢

Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ x ¼ in.	2.15¢
1½ to 2¼ x 3-16 in.	2.35¢
3 in. and larger	2.15¢
Beams	2.10¢
Channels, 3 in. and larger	2.10¢
Bands—1½ to 6 x 3-16 to No. 8	2.30¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
Norway Bars	3.60¢

Merchant Steel from Store—

	per lb
Besseiner Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black

	One Pass, C.R Soft Steel.	R. G. Cleaned.
No. 16	₩ lb 2.55¢	2.80¢
Nos. 18 to 20	₩ lb 2.70¢	2.90¢
Nos. 22 and 24	₩ lb 2.75¢	3.00¢
No. 26	₩ lb 2.80¢	3.10¢
No. 28	₩ lb 2.95¢	3.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment, ₩ lb 12 @14½

Patent Planished, W. Dewees Wood, ₩ lb A, 10¢; B, 9¢ net.

Galvanized.

Nos. 12 and 14	₩ lb 2.95¢
Nos. 22 to 24	₩ lb 3.30¢
No. 26	₩ lb 3.50¢
No. 28	₩ lb 3.80¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—

Galvanized.

Nos. 22 and 24	₩ lb 5.75¢
No. 26	₩ lb 6.25¢
No. 28	₩ lb 7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd
No. 24 ₩ 100 sq. ft.	$3.85	4.90
No. 26 ₩ 100 sq. ft.	2.95	4.00
No. 28 ₩ 100 sq. ft.	2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A A A." Charcoal:	
IC, 14 x 20	$6.35
IX, 14 x 20	7.60
A. Charcoal:	
IC, 14 x 20	$5.40
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20, 107 lb	$4.40
IX, 14 x 20	5.40

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8.50
IX, 20 x 28 with an 8 lb. coating	10.50

Seamless Brass Tubes—

List November 13, 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 21¢

Brazed Brass Tubes—

List August 1, 1908. 19½¢ ₩ lb

High Brass Rods—

List August 1, 1908. 14½¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 14½¢ ₩ lb

Brass Wire—

List August 1, 1908. 14½¢ ₩ lb

Copper Wire—

Base Price. Carload lots mill 14¼¢

Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 18¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot.

Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot.

Planished Copper, 1¢ ₩ square foot more than Polished

METALS—

Tin—

Straits Pig ₩ lb

Copper—

Lake Ingot	₩ lb
Electrolytic	₩ lb
Casting	₩ lb

Spelter—

Western ₩

Zinc.

No 9, base, casks... ₩ lb 8¼¢ | Open

Lead.

American Pig ₩ 1
Bar ₩ lb

Solder.

½ & ½, guaranteed ₩ lb
No. 1 ₩ lb
Refined ₩ lb

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson ₩
Halletts
Other Brands

Bismuth—

Per lb

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in lots for remelting
Rods & Wire
Sheets

Old Metals.

Dealers' Purchasing Prices Paid in New Yo

	Cents ₩ lb
Copper, Heavy cut and crucible	₩ lb 11.0
Copper, Heavy and Wire	₩ lb 10.5
Copper, Light and Bottoms	₩ lb 9.5
Brass, Heavy	₩ lb 7.5
Brass, Light	₩ lb 5.5
Heavy Mechine Composition	₩ lb 9.5
Clean Brass Turnings	₩ lb 7.5
Composition Turnings	₩ lb 8.5
Lead, Heavy	₩ lb
Lead, Tea	₩ lb
Zinc Scrap	₩ lb